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From the Editor's Desk

HAVE YOU EVER stopped to think that what is bought only on the basis of its cheapness is generally chosen to serve as a temporary makeshift, or because its utility, appearance, and durability are of minor consequence to the buyer? More goods today are being judged by more people on the basis of value—and isn't it for the purpose of increasing the value of an article that we use finishes? How good the finish shall be will naturally depend upon how good the article is "in the white," and how much value one chooses to add to it. If it is shoddy material and of indifferent design, it will rate only a cheap finish, but we should *never make the mistake of putting a cheap finish on an article of real value.* That would be cheating all the way around.

* * * *

INQUIRIES from readers of INDUSTRIAL FINISHING indicate a widespread interest in finishes that will perform and endure satisfactorily under very rigid and severe conditions—for example, among those interested in metal finishes there is a demand for materials that will give suitable covering and hiding qualities and luster in one coat, resistance to high temperature, to sunlight and to mildly acid and alkali solutions; in the wood finishing line, there is more interest in clearness, depth, luster, quick drying and rubbing qualities; also, color finishes for one-coat applications to be put on by tumbling or dipping or spraying.

More interest is manifest in the available measuring and testing instruments for use in determining various qualifications of certain finishing materials—all of which emphasize the fact that more users of finishing materials appreciate the importance of value and appearance in their products both at the time of and after the sale of their goods; also, they realize the necessity of obtaining their desired quality finish at as low cost as practicable, and they want to get their finishing room tooled up to the better system as soon as possible.

* * * *

THERE IS PROFIT to all concerned in cleaning up and painting up, and this spring's Clean-up Paint-up Campaign should include the places where you work as well as those where you live and play. A cleaned-up painted-up place of business and work shop creates a lasting favorable impression; it looks inviting; it attracts trade and builds confidence and prestige—which is all that millions of dollars spent in advertising can possibly hope to do. It stamps the concern as being progressive — conveying to every eye that sees the cleaned-up painted-up place the suggestion that the concern is going forward instead of retrograding.

Think this over seriously before deciding to remain a victim of inaction or procrastination, excusing yourself on one pretext or another to avoid a duty to yourself, your organization, and to all who pass or enter your place of business. Whatever is done in the way of cleaning up and painting up is a really worth while investment.

W. H. Rohr

Managing Editor

"Lincoln was right!"

says Lac:—"You can't fool all of the people all of the time."

It is very foolish of some manufacturers to continually "cut-corners" and pretend they can "hood-wink" the people into accepting poor lacquer finishes—lacquer jobs that peel, crack and fade in a few months. They should realize that the public demands what it pays for.

But fortunately, for the good of the automotive industry, an increasing number of manufacturers are specifying

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for use in formulation to produce lacquers of fine gloss, remarkable finish and lasting qualities.

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ADVERTISING PAGES ABOUT

Rubbing Wood Finishes Mechanically

By
W. E. WARNER

Practical suggestions about the selection, operation and maintenance of a rubbing machine and all the accessories and supplies used in connection with modern mechanical rubbing

RUBBING MACHINES have proved their worth and are now used extensively in all well equipped finishing rooms. After a little practice an experienced hand rubber can produce more work of equal quality with the machine than he could possibly accomplish by hand. If unsatisfactory work is produced it is due to improper handling of the work or the machine.

View in rubbing room of furniture finishing department.

Of the various types of rubbing machines, I have found the compressed air type the most satisfactory both in performance and durability. Of course, efficient operation and long life of the rubbing machine are dependent on the care given it. The machine should be oiled daily under ordinary running conditions, and twice daily when it is in constant operation. It is also essential that the air line leading to the rubbing machines contain suitable filters to remove oil, water and grit.

An air pressure from 80 to 90 lbs. per square inch is sufficient to operate these rubbing machines. I have found that a hose (leading from the air line to the machine) similar in size to the fluid hose used in the spray booths, gives better results than the usual air hose. It may be necessary to reduce the air pressure for some of the machines in order to secure the most efficient operation. This may be done by a turn of the air valve.

Felts; Lubricant; Abrasive

The quality of the finish obtained depends upon the condition of the polishing felts as well as upon skillful operation. The pads should be soft, pliable and free from grit or foreign particles. New felts should be thoroughly soaked in the rubbing lubricant

before the rubbing agent is applied.

I have found that a shallow metal pan containing a little of the rubbing lubricant, and placed on the bench, is a convenient and satisfactory repository for the rubbing machine when it is not in use. The oil or water keeps the felts in good condition and the pan prevents grit or foreign particles from contacting the pads.

The rottenstone slush, if it is clean and free of grit as accumulated, may be saved and used for work requiring a very fine polish. This will produce a much better surface than fresh rottenstone.

A simple test to ascertain the quality of rubbing, is to draw the thumb across the rubbed surface. This will expose any scratches present, as well as reveal the degree of polish attained.

Oil and Water Rubbing

The results obtained by oil and water rubbing are very different. It is generally conceded that water rubbing cuts more rapidly than oil rubbing; however water rubbing does not produce as dull a finish as oil. This is due to the fact that the oil penetrates the varnished or lacquered surface. Where a dull finish is desired, it is sometimes advisable to water rub the surface and allow the work to stand overnight; then oil rub next morning.

Where oil rubbing is practiced, the work should be performed and the oil removed from the surface as quickly as possible to avoid over-penetration of the oil into the finish. Regardless of whether oil or water is used in rubbing, a sufficient quantity of the lubricant is necessary to produce satisfactory results. I have found that an excellent rubbing oil can be made by mixing equal parts of kerosene with a non-alkali neutral oil.

Rubbing in Filler

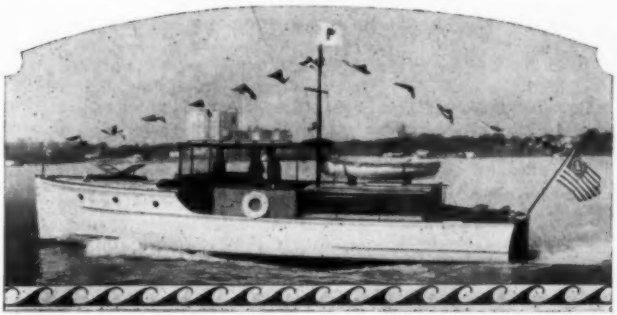
Rotary type machines equipped with rubber pads, similar in appearance to the blades of an electric fan, have proved very effective for rubbing filler into the pores of the wood. Filler is brushed across the surface, allowed to stand for awhile, and then it may be rubbed in with the rotary motion of the rubber pads or blades of this machine as the machine is moved across the grain of the wood.

Caking; Scratching

If rubbing of the varnished or lacquered surface is started before the finish is thoroughly dry and hard, caking will result. This is caused by the finishing material being picked up from the surface by the pads. Insufficient rubbing lubricant will produce the same result.

If the varnish coat is too heavy it will not rub out well. In this respect it is better to apply several thin coats of varnish than one or two heavy coats. When any pulling or picking up of the varnish occurs after the surface is sufficiently dry, the trouble may be due to the varnish containing foreign matter when applied, or that dust has settled on the surface while drying.

Foreign particles, whether they were in the varnish before application, or settled on the surface before the finish dried, will be picked up by the pads. If these particles are large and gritty they will produce a scratched finish; therefore it is essential to keep both materials and finished work perfectly clean, if satisfactory results are expected.



Painting and Finishing Boats

By
S. CURTIS

Disclosing customary practices in the cleaning, painting and finishing of yachts, motor boats, speed boats, work boats . . . what equipment, materials, methods and colors are employed in this important protective and decorative painting

WITH THOUSANDS of shipyards dotting vantage points along the Atlantic and Pacific coasts, as well as along inland water courses, the business of painting the hundreds of thousands of boats of various sizes, designs and colors has developed into an enormous industry.

Especially in the fall and spring of the year, the owners of these boats send them into the yards to be cleaned and painted. This results in an amazing sale of paints by large manufacturers throughout the country as the demands of the men who own the boats are quite varied.

Extreme care must be taken in the handling of these paint jobs. As in other lines, men in the shipyards are often obliged to do, not as they think best, but the way the customers ordering and paying for the work want it done. These requirements mean that the operators of yards must not only have men in their employ who are good painters, but they must have someone in the personnel or employ of the firm who is a good judge of paints, and who is in touch with leading paint firms of the nation.

The selection of paint for a particular job is usually made by the owners of the larger and more dressy yachts, while those who send in their work boats usually specify simply the colors they desire used. In this particular work the painting of boats is studied as it applies to the yachts and other craft not over 150-ft. in length, for it is in this line that the shipyards of the nation have their largest business.

In a great many cases the workout owners have certain color schemes for which the firm is noted in local waters. This is generally true of tug boats whereon red seems to be the prevailing color for the houses and top sides,

while black is used on the sides with the red . . . . brown copper being used below the water line and on the bottom.

Yachts, for the most part, are addicted to the use of white on the sides, mahogany finishes on the superstructure, a green or red bouy top line, and red copper below the water line and on the bottom.

As in other lines there are so many rules for the painting of boats that it is impossible to outline anything other than a few of them in an article such as this. However, there are some that it is well to bear in mind if the most is to be obtained from the paints.

Just as the homes of the land are showing up better than ever before because of the many novel methods of painting and the wearing qualities of the paints used, so also are the boats of the nation made much more imposing in appearance through the use of paint that is of such excellent quality.

Estimating the Cost

A further matter on which the profit of a painting job in a shipyard hinges, is the ability of the person taking in the job to make a reasonably accurate estimate of the cost of the work. It is useless for a firm to put its men to work painting a boat unless that work is to be profitable. Unless time and material are figured correctly there will be a loss, because the majority of yacht and commercial boat owners demand a contract price for their work, and they will not swerve from this without a disagreeable argument.

It is also true that in figuring the cost of a paint job the hauling of the boat on the ways must be taken into consideration, as it takes time for the boat to be blocked and put into the right position to be taken from the water. This is essential in painting boats, as it is only by making a profit from hauling boats that the shipyard which is small but growing can make other improvements in its painting facilities and employ more men, etc.

Where the Work Is Performed

Although some yards do their paint jobs out in the open, it is advisable to have sheds for this kind of work. The sheds give the painters the advantage of being able to work regardless of the weather. This is a tremendous advantage, for in the case of the shipyards of the south—that are located along the line of yacht travel to and from Florida—they must often paint an entire boat in a few hours. Then in the spring when the dust begins to fly freely—and there is always plenty of it along the average waterfront—the shed protects the work from the harmful effects of dust.

The yards that have no sheds or enclosed spaces simply haul the boats up on to their regular ways and paint them. In 1930, reports from both classes of yards, (both those with the sheds and those without) show that they had much painting to do and that when a rush job was secured the work was dispatched quickly by both classes of yards.

There is a great deal more to painting a boat than is generally realized. You stand beside a yacht basin and notice the trim clean appearance of the boats therein, but how many realize the great amount of work it has taken to bring about such effects. This is true of a commercial boat, but the yacht is painted for looks and upkeep while the work boat is generally painted chiefly for the sake of upkeep.

(To be continued)

Finishing Knotty Pine

By
E. C. H. ROTTMANN

Calling attention to the increasing popularity of knotty pine for residential interior paneling and home furnishings, and explaining some of the finishing methods for attractive effects

IN THE construction of residence apartment buildings and homes of the higher type, a great deal of attention is being given to the interior wood trim and paneling—not only to the selection of the wood and veneers, but that the finishes be in harmony with the type and period of furnishings to be used in each particular room.

The woodwork must furnish a suitable background to bring out the effect sought after, and where many thousands of dollars are spent for furnishings, the selection of the wood and finish is no small item.

The finisher foreman will do well to post himself on period furniture and woodwork ranging from the 14th to 17th centuries. This also, can give the foreman finisher and the interior decorator an opportunity to work for the mutual benefit of both, as these two craftsmen are being brought into closer business relationship all the time.

There is being displayed today an increasing interest in this wood paneling for the walls of living rooms, dining rooms, and even the halls and stairways. A face wood that is receiving wide attention by architects, contractors and manufacturers of panel stock is "selected knotty white pine," which is admirably adapted to any house of any size, and it is reasonable in cost; also, it is fast coming to the front for this purpose in the planning of new homes, or for making old ones modern. Many delightful effects can be gotten, and Colonial and Early American interiors can be produced with it.

This class of work should always be considered a mill job, as a

well balanced room owes its matchless beauty of knotted pine to the selections of the wood, as to being free of sappy and dark streaks and unsightly discolorations. The size and equality of the knots should be placed with an eye of uniformity that will give the entire setting a well balanced and really attractive appearance.

In the finishing room where that ever present element of moisture must be dealt with, the manner of dealing with this problem can be successfully done by painting on the back side as well as finishing on the face, especially so that when it is delivered to a new building, dampness will not be absorbed by the wood, which might cause trouble later on.

Dignity and simplicity are the set standards striven for in producing this finish, and there are on the market today, special "deal wood stains" for knotty white pine, which will mellow down to an even rich color of meerschaum brown, of the original deal wood of English favor in the 16th to 18th centuries. For an uneven rustic, aged, or antique color, for the den, or recreation room, the work can be given a coat of strong ammonia after which it is waxed and wiped to a dull finish, giving an atmosphere of comfort and appealing informality.

The finishing of this paneling and wood trim should be very simple; no attempt should be made to fill or hide the numerous small round knots, as these natural knotted markings in this white pine give it unusual pioneer beauty.

One can readily see the necessity of securing a real antique finish on knotty white pine when many mantels and carvings dated back to the 16th and 17th centuries are purchased at a great price, to be placed in these knotty pine rooms. I have in mind a room of this character, recently installed, where the new freize or cornice was so finished that an expert in antiques pronounced it a perfect replica of the year 1760 craftmanship. The old pine mantel installed in this room was known to be over 200 years old, and the effect obtained by the surrounding paneling was harmonious and pleasing in every detail of workmanship.

The finishing treatment of this job was as follows: Every part to be finished was sponged and sanded, after which a coat of deal wood acid stain was applied. This stain when dry gives the wood a pinkish hue, and may prove confusing to the uninitiated, but when a coat of white shellac is applied over the stain coat, it then takes on a warm yellow brown. This shellac coat was steel-wooled down, after which a coat of wax was applied and rubbed to a dull polish.

If any other film coat is desired such as flat varnishes, lacquers, etc., they should be very pale and practically colorless so all the finer markings are brought out to advantage—instead of doing violence to the beauty of the above mentioned finish.

Dolan Returns from South

Mr. V. J. Dolan, president of V. J. Dolan & Co., 1830 N. Laramie Ave., Chicago, Ill., has returned from a two-week business trip through the Carolina and Virginia territory in company with Dolan's High Point representative, Mr. Gordon D. Brainard. Mr. Dolan reports a decided change for the better among furniture manufacturers in that territory.

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CHICAGO

What you should know about—

Non-Grain Raising Stains—I

By A. P. NONWEILER

Explaining the theory of wood staining and revealing what action takes place when certain stains are applied to sanded wood surfaces and followed by various types of finishes; why non-grain raising stains have come into use so extensively

"Many developments have been recently made in finishing materials. Methods have changed; salesmen are being educated to know their products; they are speaking a more technical language, which is understood by the engineering and purchasing departments, but not by the finisher who must use what they sell.

"The average finisher is bewildered by the most simple terms and because he does not understand, he refuses to use materials that would save huge sums of money for his employer. The average finisher is a student of whatever is on hand easy for him to read but is not moved to look up heavy literature on the subject.

"Non-grain raising stains are comparatively new, but every foreman has a different conception of what they really are. You'd be surprised to see how many different and incorrect ideas are advanced on the subject.

"It occurred to me that INDUSTRIAL FINISHING *would be the logical medium of enlightenment, and I'm sure this article will be read and appreciated by many."—*

Arno P Nonweiler

IT APPEARS ADVISABLE, before entering into a discussion of stains, to give a brief definition of terms and other facts that will permit a more general and accurate understanding. Matter exists in three physical states—gaseous, liquid, and solid; here, however, we are principally concerned with the liquid state, and more particularly with the respective forces and conditions which govern it.

A molecule is the smallest mass of substance that can exist and still retain the specific properties of a substance. The various states of matter are dependent upon either the degree of attraction or repulsion of molecules. In a liquid the forces of attraction of molecules are too weak to produce the rigidity of the solid state, yet sufficiently strong to prevent their separation. This attraction is spoken of as *cohesion.*

Cohesion; Adhesion

Cohesion of liquids is different in the body of a liquid—where the molecules below the surface, being surrounded by other molecules and so attracted in all directions (cohesion), are in a state of equilibrium; while the top layer of molecules, being without such attraction on one side, are under strain which induces movement, resulting in the contraction of the film. The forces of cohesion on the top surfaces of liquids, one molecule in depth, are spoken of as *surface tension.*

Adhesion is the force of attraction that holds together molecules of different kinds, an example of which is the sticking of varnish or lacquer to wood.

Capillary action is a process re-

Shellac becomes a new and far superior material when mixed with—

Murphy Waterproof Mixing

A material has been developed by the Murphy Varnish Company that is truly revolutionary. It is called Murphy Waterproof Mixing and is for mixing with shellac. Just as Vanadium improves the properties of steel, this material improves shellac in every important respect.

Murphy Waterproof Mixing makes shellac much tougher and more elastic, 3 or 4 times as durable and improves its working qualities, whether used with brush or spray gun.

Murphy Waterproof Mixing is absolutely waterproof and prevents shellac from turning white or from scratching white.

Shellac when mixed with Murphy Waterproof Mixing, dries as quickly as shellac itself, seals far better, eliminates pinholing and gives increased anchorage, all due to better pore penetration. Sanding costs are cut almost in half.

When you consider all these points and the advantages they would bring to you in your own finishing jobs, you will undoubtedly want to know more about this remarkable material.

Order a quantity of Murphy Waterproof Mixing now, while you are thinking about it. Or send for further information or ask for a demonstration.

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sulting from molecular forces, by which a liquid, when in contact with the bounding walls of minute openings in or between solid bodies, is either raised or depressed. It depends upon (1) the relative strength of the attraction exerted between the molecules of a liquid for each other—cohesion; (2) the attraction exerted between the molecules of the solid and the liquid—adhesion; and also (3) a peculiar manifestation of cohesion which is confined to the surface layer of molecules of the liquid—surface tension.

When adhesion between molecules of the liquid and of the solid is stronger than the *cohesion* between molecules of the liquid, the liquid wets the solid, and the liquid will rise in a capillary tube. The next time you drink a glass of water observe that the water at the surface, where it touches the glass, is raised slightly higher all around the edges than at the center. In this case, where the water comes in contact with the sides of the glass, the adhesion at this point of the glass for the water is stronger than the cohesion of the water molecules for each other; consequently the water is drawn upward on the sides of the glass.

Capillarity; Adsorption; Absorption

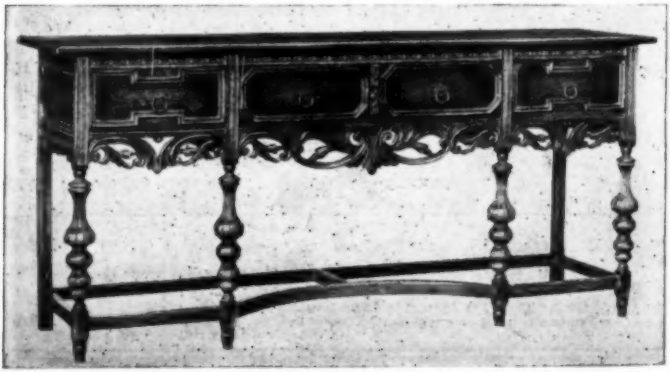
Capillarity draws ink into a blotter and raises kerosene from the bowl of a lamp up the wick where it is vaporized by heat and burned.

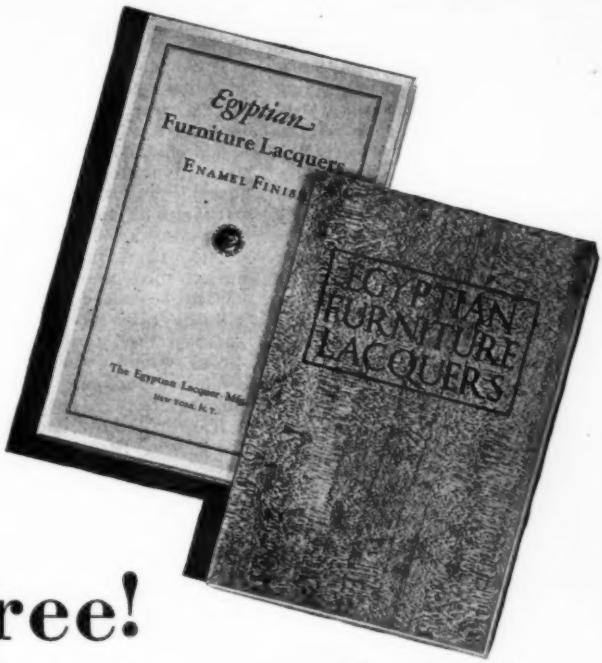
Adsorption is the process by which adhesion causes the particles of a dissolved substance to gather on and cling to the *outer* surface of a solid.

Absorption means to draw in, soak up, take in, as water is taken into the openings of a sponge.

New Type Stain

In the past two years a new and quite different type of stain has made its appearance in the finishing industry, creating, as all new things do, a considerable amount of interest and speculation as to its merit. Several large manufacturers have adopted it for use in their plants. Many have been using it on a large scale for the past two years, and it is rapidly making its appearance among the smaller factories, and through sheer merit it is replacing other types of stain.





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these two valuable books

to help you solve your finishing problems

THEY CONTAIN: Full instructions for preparing surfaces, application, rubbing, etc. • Recommendations of specific lacquers for each type of surface and effect desired • Use of fillers, thinners, shading mediums, undercoaters, etc. • How to time operations • Patching • Equipment suggestions • How to remedy common faults • Color chips.

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Other Stains

For many years water stains dominated the field of high class finishes, because principally they were fast to light, non-bleeding and uniform. An acid-type water-soluble aniline dye supplied the fastness to light and non-bleeding features, while water achieved the uniform distribution of color. The drawback was the fact that its usage was accompanied by severe grain raising, pinholing after shrinkage, and disastrous effects upon glue joints.

Oil stain was generally resorted to in the manufacture of cheaper furniture because it did not raise

the grain. However, with the coming of lacquer, it presented serious drawbacks in production, because of its long drying period and its unfortunate tendency to secrete itself in excessive amounts in corners, mouldings, and pores; and under speed methods in production and piece-work this escaped the hurried wiping of the men.

The solvents employed in the manufacture of oil stains and the vehicle in general are most unfriendly to lacquer. Good adhesion of lacquer coats over oil stain, even under the most happy conditions, was the exception rather than the rule. Wherever it remained in mouldings and corners it turned the lacquer white by throwing the cotton in the lacquer out of solution. The remedy was expensive because the film soon peeled upon drying, and the efforts to hide it with shading lacquer were too often easily discovered.

The basic type oil-soluble dyes used as a coloring medium were soluble in the lacquer solvents and naturally the color was drawn through the film to the top, where it rubbed off quite easily and unfortunately soiled many light garments. Then again the dyes faded out—in some cases before the merchandise reached the customer.

Spirit stains also faded and bled and were used mostly for touch-up work, where edges had been sanded through and patches made in the film.

If ever there was a necessity for a more perfect article it was here in the furniture industry, and manufactures began investigating permanent, penetrating, non-grain raising stains.

Let us now peer into the stain subject a little more closely and find out more about it. I said water stain was more uniform than oil stain, and faster to light, but that it raised the grain; let us see why.

(To be continued)

Paasche Opens Branch in Pittsburgh

The Paasche Airbrush Co., 1921 Diversey Parkway, Chicago, Ill., announces the opening of a new branch office under the management of Mr. H. V. Schweitzer, located at 431 Grant Bldg., Pittsburgh, Pa.

Marietta Establishes Canadian Subsidiary in Toronto

In January 1930, The Marietta Paint & Color Co., Ltd., was incorporated at Toronto, Ontario. This company is a Canadian subsidiary of the American company which operates plants at Marietta, Ohio, and High Point, N. C. This Canadian subsidiary manufactures the complete Marietta line.

How much is the deficiency in the quality of your lacquer costing you?

Rejects, returns, sub-standards - all total up to give a dollars and cents answer to this question. Add to this the loss of good will and the difficulty of reselling, and you have the most convincing argument against sacrificing quality to price per gallon.

How much is the excess in the quality of your lacquer costing you?

Only successful lacquer makers and users know the answer to this question. They know that for every lacquer use there is a needed degree of lacquer quality necessary to insure the satisfaction of their respective customers. Any excess of quality beyond this needed degree is waste, and cuts into profit.

Both the successful lacquer maker and the successful lacquer user know that the correct amount of Butanol is an important factor in assuring any needed degree of lacquer quality at lowest cost.

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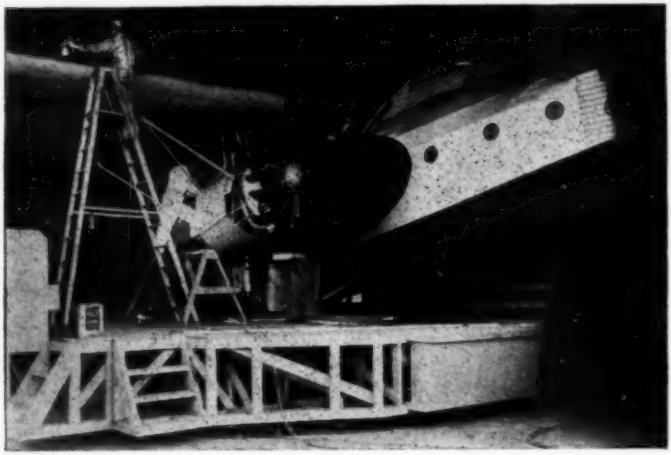

Refinishing Fokker Aircraft

By
C. L. HARDY

Third article in a series describing the material and routine specifications included in cleaning, conditioning and finishing the metal, plywood and fabric surfaces of modern aircraft in service for Western Air Express and subsidiary air lines

THE STRIPING, if running along the upper and lower longerons and into a fish nose at the center cowling, should be applied first, using a wooden pointed pair of dividers (in preference to pencil, chalk, or crayon) and using the longerons to space or guide from. The impressed line from the dividers makes a well defined line to run the tapes on. Follow the line and step back and sight down the top edge as you go along. This is positive, while stepping away and facing the stripe for trueness is a chance guess.

If there are three parallel stripes, as on our ships, spray on the middle color first and mask over that. Special care must be taken in placing the stripe over the cockpit door. Be sure that the metal men have finished fitting the door and the piece that goes just above it, as if there is a change made after the stripes are applied, they will not line up truly.

The Ensignia

A lacquer ensignia is far more permanent than the finest gold leaf. Use the same type lacquers as were applied on the fuselage. Striping lacquer colors are of a different formulation and check too readily. Mix clear in these colors also. The conventional lacquer stencil work can show as much detail as modernistic poster

COMPATIBILITY in WOOD LACQUERS

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LINDOL-B

assures these advantages

Depth of finish	—	due to high refractive index of Lindol-B
Body	—	" " high specific gravity " " "
Flexibility	—	" " plasticizing ability " " "
Moisture resistance of film	—	" " Lindol-B being moisture repellent
Clarity and Hardness of film **Tensil strength** **Adhesion** **Minimum shrinkage**	—	" " blending ability of Lindol-B

Checking and cracking are eliminated and a permanence of the above properties is assured by the plasticizing power and the absolute non-volatility of Lindol-B.

LINDOL has stood the time test of service.

Tests

Purity — No darkening should occur when Lindol is treated with concentrated sulphuric acid.

Solubility — No cloudiness should occur when resin solvents are excluded from a clear lacquer.

Compatibility — Note the quantity of hydrocarbons necessary to cloud clear lacquers plasticized with Lindol-B.

Lacquer Manufacturers — We will be glad to submit samples, technical data and quotations upon request.

Lacquer Users — Insist on Lindol plasticized lacquers and improve the quality of your finish.

CELLULOID CORPORATION

Factory:
290 Ferry St.
Newark, N. J.

Chemical Specialties Division

Sales Office
10 E. 40th St.
New York, N. Y.

types, and is certainly more easily kept up.

Care for your stencils as you would your finest sable hair brushes. If they are the water-adhesive, gummed-back type, dust on a little powdered talc, and lay them flat on a stiff board or piece of metal and store away carefully. If they are of the type that comes with Holland cloth backing, replace the cloth and lay away flat.

Should the finish be over an old cover, this should be sanded first, removing the old ensignia and striping, using No. 150 sandpaper. An ideal sanding liquid can be prepared by using one-fourth thinner and two-thirds gasoline, as this solution gives exceptional abrasive and cleaning action in the one operation.

Use a deturgent cleaner, T. S. P. (tri sodium phosphate) on the belly of the fuselage, and follow up with a wash of thinner.

This part of the ship is always the very dirtiest, and needs a very careful cleaning. Use thinner to clean out the grease of the axle strut fittings, and pick up the grease as it runs from the fittings.

Spray on two coats of aluminum pigmented lacquer. The amount of bronze powder per gallon will vary, according to the condition of the cracked surface. Use no more than necessary. About 8 or 10-oz. per gallon of lacquer will be ideal under most circumstances. Sand this filler coat dry with No. 150 or No. 180 sandpaper. Wipe off thoroughly before applying finish color coats.

Use your color coats reasonably thin, and under low pressure, so as to avoid a pebbly finish as well as dry laps and streaking.

Mix in about 20% clear lacquer in the last three coats, or start adding the clear as soon as the fabric is colored solidly. Never spray the straight clear lacquer over the solid covered color coat. Above all, use good thinner.

The reason for this statement is that the tough clear finish coat cannot be really successfully and easily spotted in. A spot in a job is never easily made permanent over a straight clear finish, as it is over one where the clear is mixed into the color coats. The straight clear finish soon takes on a decided yellowish cast that must be brought out in matching the spot in color. This mixture will soon be fugitive to light, and in a short time it will not match up with the main part of the ship's color.

All honest salesmen that are practical men will confirm this statement, as they really have nothing to fear from loss of sales. The quantity of clear, mixed into the color, amounts to just as much as though it were applied straight over the final coat. This statement comes from notes and observation over a very long period of time. Please understand I do not say that a clear lacquer finish cannot be spotted in, so that it cannot be seen, as I have done that myself and made a perfect and lasting job; but I do reiterate the statement that the mixed method is the most permanent and economically maintained and applied.

Wing Preparation

The motors should be covered with separate cloths; cloths about 14 x 18-ft. are ideal for this, as they can also be used as fuselage covers on smaller ships. The cover for the F 10 fuselage should be at least 30 x 36-ft. so as to also care for the new Fokker F 32's that are now rapidly being put into service.

WITH THE RIGHT FINISH, YOU'LL FINISH RIGHT

Leading the Spring Parade!

Right out in front—and bound to hold this dominating place by its color, its clear finish, its adaptability and its economy, is our new

No. 375 BROWN CONCENTRATED WATER STAIN POWDER

It is 100% Pure Color, requiring less stain per gallon than ordinary colors.

It Produces a Finish of clearness and transparency, bringing out all the natural beauty of the wood.

It is Economical to use, because of strength of color.

It requires only ½ to 1 ounce per gallon, depending upon depth of color desired.

It may be blended in any proportion with our new

No. 385 RED CONCENTRATED WATER STAIN POWDER

to secure any brown to red shade to meet individual requirements.

Samples and prices on application. Send your inquiries to either office.

LILLY

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273 N. California Ave. Chicago, Ill.

FILLERS — STAINS
LACQUERS — ENAMELS
VARNISHES

We are prepared for the future expansion of big ships. If the cockpit door cover is removed; use drop cloth over this.

Cover the fuselage and cockpit with a complete blanket of drop cloths and paper.

If the wing is to be finished in two colors and one is red or orange or some other bleeding colors, spray this color last, to avoid any bleeding troubles. The new non-bleeding reds are well worth investigating, as all with which I have come in contact, rate No. 1 or No. 2 in permanency.

Should new shingles be part of the major overhaul, be sure to use an oil sealer—one that is short enough to apply a lacquer finish over, in from 16 to 24 hours. Wipe surplus oil from close-grained part of wood panels where it does not soak in. This oil sealer gives better wood protection than any lacquer sealers that I have come in contact with; it penetrates the wood better and leaves a more pliable and lasting film for a much longer period of time.

The Surfacer Coat

An oil-base surfacer over this is ideal and superior, I believe, to other kinds, but the main objection to this is the fact that if the hangar in which the ship is being finished is small and opens into other shops or departments, the wet atomized dust from this kind of application is very apt to spread over and settle ruinously on machinery, motors, tools, benches, and so on.

The lacquer surfacer is practically on par, if applied over oil sealer primer, and in many cases superior to the oil in its ease of application and future maintenance. In fact, it is used on 90% of our Fokkers, and it is giving all the service that could be wished for. A little extra care in selecting the proper type and in applying it will make it give just as good results as other types. The statement on the oil material is based on the fact of the exceptional seal, bond, and flexibility of oil vehicles.

Precautions to Take

In all cases where the panels are taped, go over these first with a coat of surfacer (using a cone spray) before coating the main part of the wing. Choose a thin weight tape, as tape is used only to keep moisture out—not to hold down the nails. Scuff off the oil sealer. If oil surfacer is used, apply two coats, thinned only with pure turpentine. If lacquer surfacer is used, apply either two or three coats according to the type of material and equipment in use.

See that the tanks, covers and all repair work are finished before proceeding with the wing finish coats. This careful checking is the only real salvation of the painter to keep the "powers that be" from complaining of work costing too much from spotting and doing over again. Keep such ideas as routine in your mind at all times, as this is equally as essential as being an expert spray man.

Fill and sand the tapes carefully as, due to their porous nature, they will not show up as uniformly filled with the rest of the wing finish if not properly cared for from the start.

Should the wing be a refinish job over an old lacquer surface, check the tapes and glue all loose parts with a cement in preference to dope. There are a number of good cements now on the market.

(Continued on page 58)

ENGLISH WALNUT

The very latest, newest shade for Walnut Furniture—secured with

2844
English Walnut Paste Filler

A beautiful rich warm brown color, perfectly suited to the latest designs in Walnut Furniture. Produces a rich, clear transparent color on both butt and straight grained Walnut.

Write for a 25 lb. sample at the drum price. Do it today.

THE GILBERT SPRUANCE COMPANY
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PROTECTIVE SPRUANCE QUALITY FINISHING PRODUCTS

Sanding Between Coatings of Finish

By
W. D. HENDERSON

Foreman finisher tells something about this important but very particular operation which should be entrusted only to skilled workmen supplied with suitable sandpaper

IN THE MAJORITY of woodworking plants hand sanding has been almost eliminated. Machines perform this job faster and with greater uniformity than the skilled hand sander. With machine sanding coming into general use, the surfaces of articles entering the finishing room have been greatly improved. The sanding of intricate parts, such as mouldings, shaped edges of tops, grilles, etc., on various types of machines has promoted an ease of operation that makes negligence the exception rather than the rule.

Along with many other things, sanding has been more or less standardized. This improvement in surface quality is of profound benefit to the finisher in obtaining an excellence of finish hitherto impossible.

Sanding in wood finishing rooms is confined almost exclusively to hand methods. There are several types of portable pneumatic rubbing machines equipped with two reciprocating shoes to hold felt pads. These felt pads may be replaced with sandpaper or steel wool pads. The rubbing pads of large rubbing machines, such as are used on desk and table tops, may be changed to abrasive pads.

All of these machines will produce excellent results on certain classes of work, provided they are manned by skilled operators. The principal reason why these machines, as well as other types of machine sanders, are not used for sanding the finish, is the danger of sanding through the comparatively thin undercoats.

There are innumerable kinds and grades of abrasives in both dry and wet sandpapers. Hence it would be impossible to prescribe definitely the exact grade to be used on various classes of work. A dry sandpaper ranging from Nos. 4/0 to 6/0 in fineness is suitable for sanding undercoats in the majority of cases. The determining factor in selecting the proper grit paper, is the degree of smoothness of the finished surface to be sanded.

"The smoother the finish, the

Compressor SATISFACTION

For paint spraying, you can't find an air compressor that is more dependable, more economical in operation, lower in upkeep or longer lived. Quincy Compressors are designed by compressor engineers of long experience and built by a manufacturer who has set his standard high. That is why Quincy Compressors have no time limit guarantee. They must satisfy — for all time.

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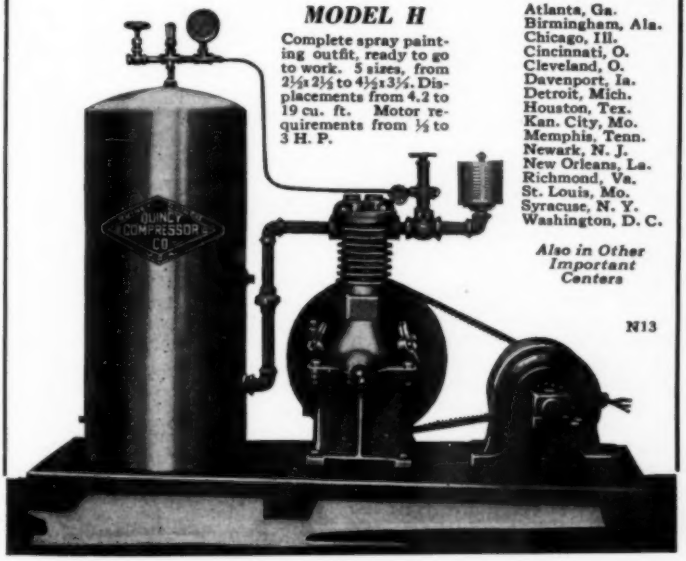
MODEL H

Complete spray painting outfit, ready to go to work. 5 sizes, from 2½x2½ to 4½x3½. Displacements from 4.2 to 19 cu. ft. Motor requirements from ½ to 3 H. P.



N13

finer the grit should be," is a good rule to follow when tempered with common sense and a knowledge of why finishes are sanded. I have found that experimenting with various grades and kinds of sandpaper on samples in various stages of finish, recording the elapsed time required for the operation and the results obtained, is time well spent; in fact this is perhaps the best method of selecting the sandpaper adapted to particular finishes.

Wet sanding is seldom used on wood surfaces because of the damage likely to be caused by excessive moisture entering the wood through the thin undercoats of finish—and at any unprotected edges.

Sanding Methods

Rules for sanding are almost as numerous as the grades of sandpaper. In the final analysis, results are all that must be considered. Some hand sanders use a wood sand block about 3 x 5-in. in size, and have a piece of felt or rubber fastened to the working surface over which the sandpaper is held for sanding flat surfaces. Other sandermen prefer to hold the sandpaper in their hands when sanding both flat and uneven surfaces, and they are able to produce equally as good results in the same length of time as by the block method.

The majority of finishers advocate sanding the finish parallel with the grain of the wood, which is probably the safest way to avoid damaging scratches.

Irrespective of the kind or type of wood surface to be sanded, it will be found that moistening the paper back of the sandpaper (dry sandpaper) will aid the abrasive materially in cutting the surface; this also prolongs the life of the sandpaper and in a measure prevents gumming or the accumulation of powdered material on the abrasive surface.

Of course it is to be understood that the surface must be thoroughly dry before sanding. Nothing will prevent a green finish from gumming or accumulating on the sandpaper. Naturally the rules of care and watchfulness must be observed when sanding surfaces having sharp edges, corners, grooves, etc.; and in sanding flat surfaces, overlapping strokes should be avoided. I have found that steel wool produces satisfactory results on exceptionally uneven surfaces, such as fluted posts, shaped edges and grilles.

One rule that should be invariably followed is: "Never sand carvings." The sharp lines produced by genuine hand carving are representative of the skill of the carver, and the lines which are perhaps less sharp as produced on carving machines should not be dulled by any kind of abrasive. Finishing materials may be applied to carvings so that their appearance will suitably conform to the rest of the finish without the use of steel wool or sandpaper.

DuPont's Comment on "Methanol Poisoning"

Our attention has been attracted to an article appearing in your December 1930, number of INDUSTRIAL FINISHING entitled "Methanol (Wood Alcohol) Poisoning."

The question of the toxicity of methanol has had recently a great deal of publicity. The furor, we believe, has been initiated by the interests opposing methanol solely because of the effect this product has on certain large markets, hitherto monopolized by

(Continued on page 37)

(Continued from page 32)

these large and powerful interests.

Methanol is not new. Millions of gallons of it have been used annually in industry, and the health conditions in the plants using it are as good as any that can be found elsewhere. Opinions taking a position against methanol that have received wide publicity can be matched with other opinions equally authoritative that are favorable to methanol when properly used.

Toxicity is always a relative thing. Most everything with which we come in daily contact contains elements of hazard, can be considered toxic, in the broadest sense of the term, if not properly used. Arguments against methanol are based almost entirely on its being used as a beverage. It is freely conceded by everyone that methanol is not a safe beverage, and it has never been offered as such.

The prodigal exploitation of opinions concerning methanol toxicity made evident the lack of real comprehensive and scientific information on this question. It was for this reason that the Bureau of Mines was commissioned through the U. S. Public Health Service to conduct exhaustive tests dealing with every possible phase of methanol toxicity. Such tests are being carried out under carefully controlled conditions by a corps of specialists with a scientific exactness and broadness of scope never before attempted for this product.

The results of the first phase of that investigation dealing with the use of methanol as an anti-freeze are embodied in Information Circular No. 6415 recently released by the Bureau of Mines, and a copy of that circular is being sent to you for your information. It is pleasing to note that this information circular clearly sets forth that methanol, when properly used, contains no real hazard as an anti-freeze.

The Bureau of Mines' work is not as yet completed. When completed, it may or may not give methanol as clean a bill of health for other applications as it has received for use as an anti-freeze. If the investigation develops that methanol can be used with a proper degree of safety in other fields, the sale of the product in those fields will, of course, be pushed, but, if the investigation reveals that the use of methanol in certain fields is incompatible with present safety standards, it most assuredly will not be offered in those fields.

Important industrial enterprises of today do not desire to offer to the public anything inimical to their good health. The well known interests of this company in public health and industrial safety should be convincing evidence that it will offer for sale nothing incompatible with those interests.

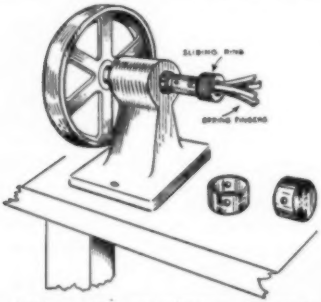
It is not our desire to enter into any controversy, but we felt that inasmuch as your magazine is a representative publication and undoubtedly desirous of maintaining an unbiased attitude, you would be interested in the work which is being done on the question of methanol toxicity and the results of that work to date.—Du-Pont Ammonia Corp.

Care and Handling of Airbrushes

The Paasche Airbrush Co., 1921 Diversey Parkway, Chicago, Ill., has prepared an illustrated bulletin giving "Directions for the Care and Handling of Paasche Airbrushes," Types A and B. Copies free.

Spraying Small Lots of Metal Cups

Much of our work at the factory calls for the finishing of small lots of special meters and this finishing must be in line with the modern trend of colors to suit the fancy of the customer. For such small lots of round meter cases

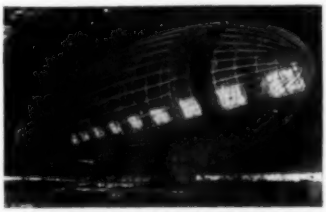


Different diameter collets or arbors take care of a wide range of small diameter metal "cups."

that are of the cup type (with a bottom in them as shown in the sketch) and which do not permit of loading an arbor with spacers between—as would be possible if both ends were open like a tube—we made the small stand shown here. It is simple yet very speedy for its work, especially when compared to holding the single piece on a hand tool and trying to spray it, or laying it on a slow revolving table.

This device consists of a mounted shaft which carries a balance wheel on one end and a set of expanding spring fingers on the other. The fingers are closed by sliding the ring forward, and they are opened or expanded inside a meter case by sliding the ring back toward the bearing. With these fingers gripping the work, a spin of the handwheel rotates the cup sufficiently to allow rapid all-over spraying. The production rate on a piece work basis is 200 per hour.—C. H. W.

Zeppelin Frame Sprayed



According to the Paasche Airbrush Co., 1921 Diversey Parkway, Chicago, Ill., the entire structural frame work of the Goodyear-Zeppelin—the world's largest—was painted exclusively with Paasche air-painting equipment.

SAN-ITAI-RIE FILLER

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For All Defects in Wood

Manufacturers in all wood-using industries find SAN-ITAI-RIE FILLER unsurpassed in filling cracks, worm holes, knot holes, open joints, dents, pitch pockets, etc., and through its use are able to send out their products without a flaw.

Put up in friction top cans—half pints to gallons—in 20 different colors. Send for sample can.

SAN-ITAI-RIE FILLER CO.

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Grand Rapids Chair Company

Manufacturers of

Furniture.

Grand Rapids, Mich.
Dec. 4th, 1929.

Grand Rapids Blow Pipe & Dust Arrester Company,
Grand Rapids, Mich.

Gentlemen:

Referring to your letter of November 30th relative to the Dust Collecting System you installed for this Company about 20 years ago.

This system complete including Fan, Dust Collector was installed, and the old system removed without any loss of operating time which was a feature of the contract.

It has been necessary to increase the speed of the Fan about 10%, due to increase of equipment, but we have from 3½ to 4" suction now at the hoods of machines.

It was also necessary to install a separate dust collecting system for our machine sanding departments. This system , as you know, has also slow speed fans and intensive draft at the respective hoods.

The entire equipment is very satisfactory and well designed and installed. The power requirements and low maintainance cost very satisfactory even over this period of years.

Yours very truly,
GRAND RAPIDS CHAIR COMPANY
F. M. Townsend
Supt.

FMT*L

FOUND IN A SERVICE ENGINEER'S NOTEBOOK-

"FORGET THE REJECTIONS . . . FINISH THIS CONTRACT ON T

"Yes," said a du Pont service engineer, as he took off his coat and jumped in to help save this furniture manufacturer thousands of dollars.

FOUR carloads of furniture rejected! Because the finish chipped. Here was a pretty mess . . . in the middle of the heaviest production, with a big contract in danger.

But the president of the furniture manufacturing company was a fighter. He knew the reputation of du Pont for licking difficult finishing problems. He decided to give du Pont finishes a chance.

So the president telegraphed for help. A du Pont engineer rode three nights and two days to arrive on the scene. Two hundred gallons of du Pont finishing materials were ordered for tests.

Just one week elapsed between the call for aid and the service engineer's start in the plant.

The problem was: Install a new finishing line-up . . . produce a better finish . . . replace the rejected shipment . . . and make up a week's lost production.

After working three days and part of the nights in broiling hot weather, the production wheels started again.

What would be the result? All fears vanished, however, when the first piece came through with a beautiful new finish, which saved time and material and was superior in every one's estimation to the former one.

Today, only du Pont finishes are used in this plant. And finishing troubles are no longer a thorn in the side of production.

DU PONT FINISHES

EBOOK—STORY No. 4

S . . . CAN WE ON TIME?"

THE days of du Pont service engineers are spent in helping manufacturers correct faults in the application of finishes. They find ways to reduce finishing costs and add to the beauty of the finish.

A great deal of their work is showing furniture manufacturers how to gain more enduring beauty for their products by using a du Pont finish. There is a du Pont finish or finishing system for every type of furniture. Through rigid control of raw materials and manufacturing processes and through pre-testing of every finish—du Pont can supply finishes of uniform high quality—capable of increasing the value of your products—enhancing their original beauty . . . and retaining that beauty for a longer time. Why not let us see if there is not a du Pont finish that because of its speed, economy, durability and beauty, will meet your needs perfectly? This is the time to examine every possible way to make your production more efficient . . . less costly. Perhaps we can help you find that way.

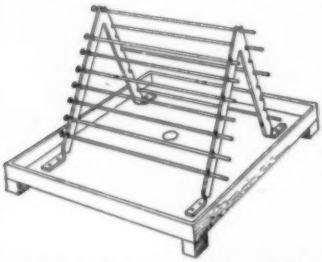
• • •

E. I. DU PONT DE NEMOURS & CO., Inc. Industrial Finishes Division, Dept. PB4, Parlin, N. J. Chicago, Ill. San Francisco, Cal., Everett, Mass. Canadian Industries Limited, Paint and Varnish Division, Toronto, Ontario, Canada.

Drip Rack for Small Articles

It is in the universal exchange of ideas that we obtain more knowledge and advancement. In the way of exchange, therefore, I submit herewith a sketch of a convenient drip rack which is simple yet very practical and easy to construct.

Our work requires the dipping of 2,000 steel drop-forged magnets after they are finish machined, in a bath of "Ruststop" a liquid preparation for the prevention of rust. We are not doing enough liquid-dipping to warrant the installation of any commercial equipment, so in the emergency we made the rack shown in the accompanying drawing, and it takes care of our present needs. With this outfit it is possible to dip and rack for drip drying 700 magnets in 45 minutes, the capacity of the rack.



Can be used for many kinds of dipping work, to hold parts similar to those shown in the sketch.

We use rods that have a large washer riveted to one end, load each rod, dip it and put it in the rack, separating the magnets a little after the rod is in the rack. The drain pan is low at the center and the excess finish from parts hanging from each rod drips clear of the other loaded rods due to the A-shaped end supports. When the finish is dry, the rods are quickly cleared by tilting them to let the pieces slide off into a box.—C. H. Willey.

Nichols New Oven Bulletin

The Nichols Products Corp., 12953 Greeley Ave., Detroit, Mich., has ready for distribution its Bulletin No. 110 illustrating and describing the Nichols Advanced Lithograph Oven. This bulletin is 8½x11-in. in size and gives in detail the space requirements, conveying equipment, oven construction, etc.

Colors Popular for Automobiles

According to the March issue of "Automobile Color Index" published monthly by the Duco Color Advisory Service: Black is back in the lead again. The gradual decline in favor recorded for this finish during the last 90 days has been abruptly terminated by a small gain. In spite of this it is not probable that black's progress during this month will parallel very closely the record acceptance accorded black in March, 1930.

The public seems ready to champion a new color leader. Blue appears to be the logical contender in spite of the slight deflection of blue's recent rise. The performance of blue last spring gives emphasis to this contention. The popularity of rich navy blues seems to be well sustained, judging from the continuation of serge and boatswain as the industry's most prominent blues. Deep, stygian blue and expansive state blue are back in the group of leaders once more after a 30-day lapse. These two blues together with dark, lively Town-Car blue and St. Piran, a blue of full rich chroma, the only two newcomers to blue prominence, substantiate the high fashion value indicated for blue shades of reddish hue.

Brown, for the first time since August is on the upgrade.

The decline in the green color trend has flattened out considerably, bearing out last month's forecast that this hue's relegation to fourth place would be of short duration. Green is tied with brown for third place and displays a relatively steady trend in comparison with the other color families.

Maroon has experienced an abrupt loss of favor. The advance of the brown color family was accomplished largely at the expense of maroon.

Gray has demonstrated extraordinary activity of late.

Metal Finishing Department

Cleaning-Handling Baking & Polishing

Cleaning and Finishing Surgical Furniture

Secretary of American Metal Furniture Co., Indianapolis, Ind., describes the metal cleaning and lacquer finishing of hospital equipment in white, colors and grained effects

By STANLEY C. BROOKS

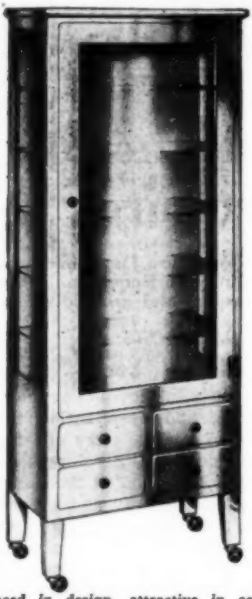
SURGICAL FURNITURE or hospital equipment includes a wide variety of operating and examination tables as well as chairs and cabinets of various sizes and kinds. At one time white was the predominating color used for this type of equipment, but color has invaded the hospital, and now ivory and various shades of gray and green are demanded, Neptune green being a popular favorite.

Excepting in certain types of cabinets, there are no large surface areas to be finished in surgical furniture. However, irrespective of the amount of finished surface areas, all of it is subjected to severe wear. The finish must be well bonded to the metal to prevent chipping, and the quality of the final coats must be such that they will resist staining by blood, drugs and chemicals.

I have read many articles in this paper on the subject of metal finishing, and nearly all of them have stressed the importance of metal cleaning preparatory to finishing. And to those of you who are in any way responsible for the quality, durability and appearance of the finished product, I want to state that I join with all who have written on this subject in

saying that *too much attention cannot be given to metal cleaning.* When we hear and read so much on a particular subject, the monotonous repetition often robs the subject of its real importance.

Our method of metal cleaning is not complex, but it is adequate;



Balanced in design, attractive in color, smooth of surface, sanitary

inspection is rigid. While we do no pickling, we have partitioned off a room where only metal cleaning is done. Furniture is brought to this room from the fabricating departments, and here it is washed all over with oleum spirits, then sanded, and again it is thoroughly washed with oleum spirits, wiped dry and inspected.

Immediately after cleaning, a bond coat is sprayed on, which consists of a mixture of linseed oil and spar varnish. This produces a binder or cushion for the succeeding coats, and also protects the cleaned metal surface if the part is not immediately finished. For instance some of the parts are interchangeable and these may be held in stock to be finished in any desired color, the bond coat preventing an accumulation of rust.

Furniture going through on regular schedule, the bond coat is allowed to dry overnight and then the undercoat (oil base) is sprayed on. This dries for about 12 hours and the surface is putty glazed, using a flexible knife for this purpose. The glaze is allowed about three hours drying time; then the surface is sanded. We use No. 2/0 sandpaper on all castings and No. 4/0 sandpaper on sheet steel. Cleaning follows; then a second undercoat is applied which dries overnight. The entire piece is sanded with No. 4/0 sandpaper, cleaned and coated with two or three applications of pigmented lacquer, the number of coats depending on the nature of the work.

With the exception of the bond coat, all of the undercoats are of the same color as the final lacquer coat. As the lacquer penetrates the undercoats, the various films are amalgamated into one finish which is uniform in color throughout, and bonded to the metal surface by the primer.

Surgical furniture to be used in physicians' offices is sometimes ordered in mahogany and walnut finish to match the interiors. These pieces are finished as described, up to the second coat of pigmented lacquer, the color being the background of the wood to be represented. Graining is done by hand. After the graining coat is dry, a heavy protective coat of clear lacquer is applied.

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that have introduced new standards of efficiency and economy in finishing operations

Bulletins Describing the Various Types of Nichols Heaters, Condensveyors, Dip Tanks and Ovens May Be Had Upon Request.

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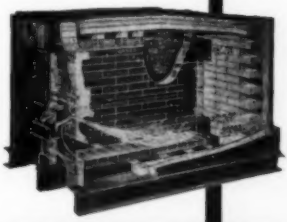
Oil or Gas Fired, designed in both DIRECT and INDIRECT Types—for high temperature drying, baking and processing—assuring a more uniform circulation and distribution of air at all temperatures from 80° F. to 700° F. under positive automatic control



Condensveyor System

Parallel operation through oven and tandem operation outside oven. Permits shortening of ovens and saving in floor space. Complete section of track is raised or lowered vertically into smallest rectangular tank.

Sadwith Oven Panels

for patented Post and Beam construction of Body, Box and Conveyor type ovens—easily and quickly erected and readily adaptable to necessary changes in location. Distinct saving in oven operating and maintenance costs.

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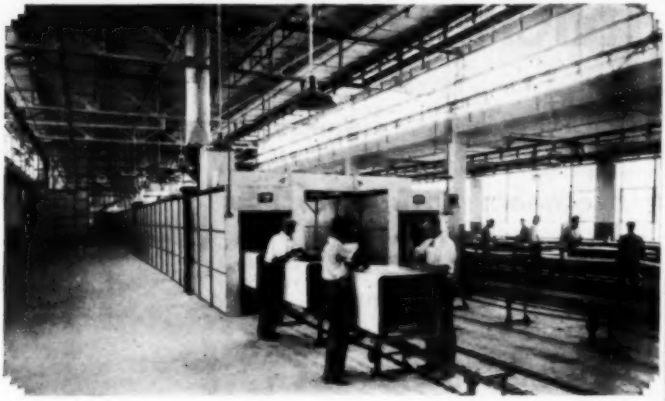

Bake Finishing Parts for Majestic Refrigerators

By
J. B. NEALEY

What occurs in new conveyorized plant where the latest equipment is in operation for cleaning, rinsing, and drying of metal parts, followed by dip-finishing, spray finishing and the oven baking of finish coats on modern refrigerators

JUST AS the automotive industry expanded by producing progressively lower and lower priced cars, so will the mechanical refrigerating industry receive its impetus through the manufacture of units within the reach of the middle and lower classes. One of the first concerns to recognize and act upon this principle is the Majestic Household Utilities Co., Chicago, Ill., which has just erected a modern plant equipped with the latest machinery for the mass production of a mechanical refrigerator.

The layouts of the machines, tools, and other units used in the making of this refrigerator are the last word in progressive, straight-line operations. The setup for cleaning and painting the sheet steel stampings going into the construction of the "box" is unique in that the parts pass through the several operations, including the gas-fired baking ovens, continuously and without interruption.

These parts come out of the stamping department suspended from two monorail chain conveyors that are parallel and about 5-ft. apart. They first pass through the cleaning layout consisting of a cleaning solution and rinse, (both sprayed on with pumps and

Presto NUMBER 97 SPRAY GUN PROVES BEST BY ANY TEST

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Model 97OC air line outfit. Air conditioning unit, pressure regulator, gauge and 25 ft. 1-4" air hose as shown above, complete with No. 97 - B gun—$44.75

The guns and outfits listed here are only a few of many items comprising the complete line of Presto Spray Painting and Finishing Equipment pictured and described in the new Presto Catalog No. 32. Send for your copy today—use the coupon—no obligation.

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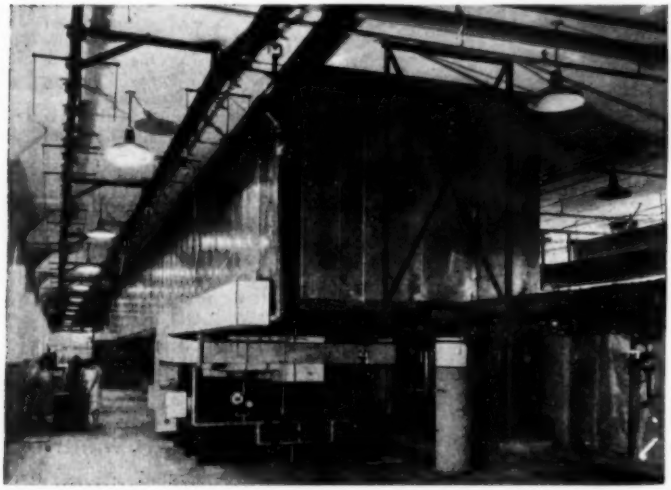
1F-4 Gray

nozzles), an etching process in which the etching solution is also sprayed on—and which gives to the sheets a finish similar to that produced by sanding; and then a final rinse. The pumps, nozzles and tanks are all located in a sheet steel housing 15-ft. wide and 7-ft. high, which is built in the shape of a squared letter "S," the two short sides being 80-ft. long and the middle about 200-ft. in length.

The drying oven is next in line and this is constructed of sheet steel, suitably insulated, and about 100-ft. in length. It sets on legs, and a separate air heater, fired with gas, is located beneath. The monorail conveyor carries the parts through this oven and then on through the other ovens. These parts receive three coats of paint and each is baked on in an oven after application. The first is received when the conveyors automatically dip down and drag the parts through a tank of paint, while the others are applied by operators with sprayers, as the parts pass through hooded booths.

As all of the many baking ovens in this layout are heated with the same kind of unit as is the dryer, or multiples of same, it might be well to describe this gas fired heater at this point. It consists of a sheet steel box, well insulated, from the top of which is suspended a series of sheet steel heat exchangers. Each of these is made of two sheets of steel, placed close together and enclosed on the top, bottom and two ends to form an airtight box. These are hung close together and extend as a pack from the top of the heater to about two-thirds of the way to the bottom, the space below serving as a combustion chamber.

In one end of this heater are located two gas burners, close to the bottom and firing into the com-



View of dry-off oven; note conveyors and gas-fired air heater with flues for air circulation.

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One Coat Spraying Enamel

1. The use of BERCO 1-coat Spraying Enamel permits maximum thinning and results in greater spread per gallon.

2. It adheres and levels perfectly, forming a tough elastic film.

3. It covers black iron solidly in one coat, baking or air-drying to a hard, glossy, porcelain-like surface.

4. It does not "paper print."

5. It does not "orange peel."

Check these facts for yourself in your own plant under actual working conditions. We shall be glad to send you a free quart sample for trial or ship you a 5-gallon pail on approval. Write Department 431, Industrial Sales Division, mentioning this advertisement.

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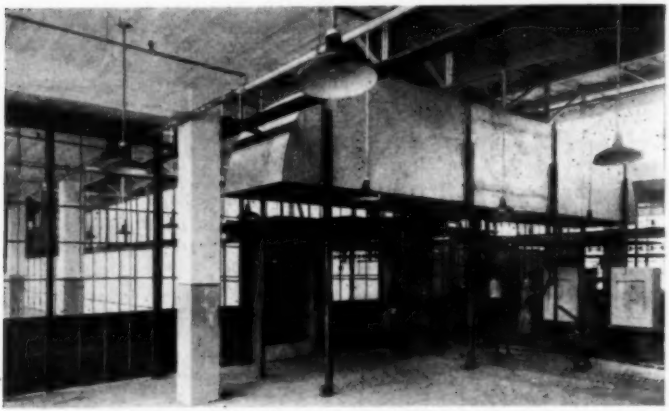

End view of first white coat oven showing conveyors, etc.

bustion chamber, the hot products of combustion rising between the heat interchangers. Most of the heat passes through the steel sheets and is imparted to the air being drawn through the heat interchangers. The heated air is blown into long ducts within the oven and then through a series of ports in the ducts, directly into the oven itself. In this manner complete distribution and uniformity in heat application are attained.

There are return ducts through which a part of the waste heat from the oven is drawn out and forced back into the heater for reheating and recirculation. However, the air from the oven must be mixed with fresh air in order to obtain the proper baking atmosphere within the oven. The ratio between fresh and used air is determined by the nature of the paint or japan, and ranges within wide limits. Naturally the lower the percentage of fresh air required the less is the consumption of fuel.

The pressure of the gas in the gas supply main is increased in a motor driven blower and entrains part of its air for combustion as it passes through the burners. Secondary air for combustion is admitted through the grid, around the burners and regulated with shutters. A valve in the supply line is affixed to a pin and diaphragm and is kept in the open position by the gas pressure, which is piped directly from the line to the under side of the diaphragm. If, for any reason, the blower stops and the pressure fails, the diaphragm sinks, the valve is closed and the gas flow stopped. There is a by-pass around this valve which allows enough gas to pass to keep the burners lighted.

The temperature of the oven is maintained by an automatic temperature control, operating another on-and-off valve, close to the first and within the by-pass. With the pyrometer set for a certain temperature this valve opens and closes as the heat rises or falls above or below this point, always maintaining a fairly straight line on the recorder, which is a part of

AT a certain radio manufacturing plant (*name on request*), insulating pitch adhering, here and there, on the transformer cans could not be completely removed as the chassis was moving along the line to the spray booth. An enamel was sought which could be sprayed over the clean and pitch-covered metal and adhere to *both*. In addition, this enamel must have perfect adhesion to brass and cold-rolled steel.

(*Ordinarily, pitch or wax is dissolved by the solvent of the lacquer, leaving a shiny, moist, grease mark to mar the surface; or a leopard-spotted appearance results from the pitch or wax bleeding through the finish.*)

We licked this tough assignment to the customer's and our own entire satisfaction. The quality of the finishes, as a direct result of our custom-built lacquers, paraded on the heights of perfection.....but one fine day THE TELEPHONE RANG.....

Our enamels were no longer adhering to the base of the chassis!

One of our men grabbed the next train. Inspection at the plant smoked out the trouble.

The Engineering Department had decided to Cadmium-plate the base!

The Production Department went right on using our materials, finding the usual excellent adhesion to the brass and cold-rolled steel parts.....lack of adhesion to the *cadmium-plated* ones!

We were called upon to devise a material to possess all the characteristics described above (adhesion to brass and cold-rolled steel; no demarcation lines when sprayed over both clean and pitch-covered metal..) PLUS completely perfect adherence on CADMIUM PLATE!

As you probably know, Cadmium Plate means finishing trouble. Before you can say Umph.....the surface begins to oxidize, taking on a whitish film.

So many types of enamels having good adhesion on other metals, when applied over Cadmium Plate, *seem* to be all right. A few days later, *after* chemical reaction, a fine film forms between the cadmium plate and the lacquer coating, making a sandwich of oxidized film between the coating and the metal. This is the beginning of the end for adhesion....and the end of the finish.

For your information, we very successfully worked out this problem.

If you are experimenting, or actually working with Cadmium Plated materials, we can undoubtedly be of some assistance.

■

We have informative Research Bulletins on lacquer-finishing any of the materials listed below.

Check the subjects in which you are interested.

Attach the list to your letterhead.

ROXALIN

Flexible Lacquer Co., Inc.

35-40 Thirty-Sixth St., Long Island City
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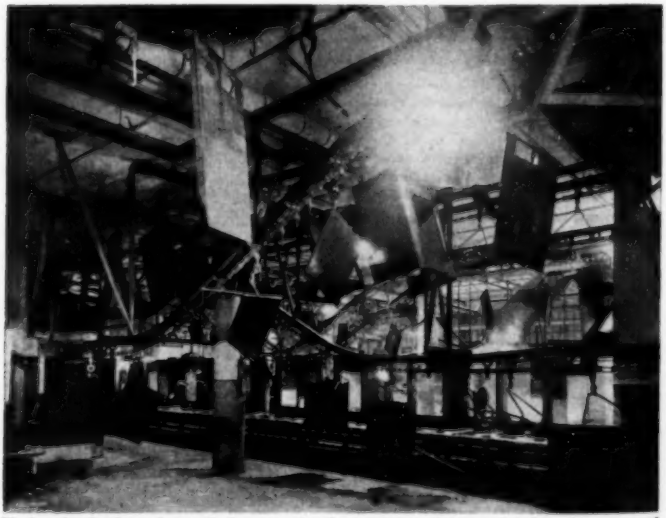
☐ WOOD ☐ RUBBER ☐ ALUMINUM
☐ BRASS ☐ ZINC ☐ DIE-CAST METAL
☐ CLOTH ☐ GLASS ☐ CADMIUM PLATE
☐ STEEL and Other Ferrous Metals

the control equipment. The valve is opened with a magnet operating against a spring.

As before stated, the two conveyors with their loads descend in their travel to dip the parts in a tank holding the paint for the base coat, make a complete turn and travel back parallel with the base coat oven. This oven, like the others, is of sheet steel well insulated. In width, however, it is much narrower, and in height it extends from floor to ceiling. With this design the oven becomes a double decker, one conveyor and track descending until it is directly below the other, with sufficient room between for the parts to be baked. The two conveyors enter the oven, in this position, about 30-ft. from one end and make several passes through the oven before emerging.

It requires six heaters to supply the heat for this oven, and they are located in two banks of three each. When the conveyors come out of the oven they rise at an angle, through the ceiling to the floor above. Partly assembled refrigerator boxes are also lifted to the second floor on elevators. Here are located four parallel ovens, each just high enough to accommodate one line of work. The charging ends of these ovens, and considerable space around them, is enclosed in a room with glass sides, and which is airtight to prevent the infiltration of unclean air. Filtered air is supplied with fans and a slight back pressure is maintained.

The two overhead monorail conveyors pass through the two outside ovens while slat-type conveyors serve the inside ovens and carry the boxes. All of these conveyors, however, pass through



Notice the intricate but orderly network of conveyors, above and below, by means of which parts in process are kept moving.

A New BRASS LACQUER R-1809

R-1809 is an exceptionally light colored brass lacquer, especially adaptable for spray or dip applications on brass articles which will be exposed to the weather.

R-1809 gives a permanently flexible and adhesive film, possessing remarkable resistance to tarnish on exposure. For spray application R-1809 is used with an equal volume of thinner.

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spray booths, lined up in front of the ovens, where the first white coat is applied. There are two sources of heat for these ovens, the first being four separate air heaters located on the floor below, and the second being waste heat from the base-coat oven.

The work travels through these ovens and out at the other ends directly into another room and other sets of spray booths where the second white coat is applied. From the spray booths they pass directly into another battery of ovens, but this battery consists of three only, one of them being double decked to receive the two chain conveyors as was the base-coat oven. This latter oven is much shorter than the two refrigerator box ovens, for the conveyors make several passes through it from front to rear.

When the chain conveyors emerge from the final bake, they rise to the ceiling, cross the room, and return close to the charging end of the ovens where they feed onto two assembly lines running parallel with the refrigerator box ovens. Here the refrigerator door assemblies are completed, on roller conveyors, and at the end they make a right angle turn down the final assembly lines. The slat-type conveyors from the refrigerator box ovens also make a right angle turn here, become roller conveyors and become part of the final assembly line. Several other roller conveyors, between the four described, complete the final assembly installation. Here the doors are fitted on, the refrigerating unit is installed and all the last parts put on.

Automatic Oven Doors

There are many points about the modern industrial drying oven that are interesting indeed. One of these, which has been observed in some places, is the application of doors that open and close automatically as the material enters and leaves the oven. While in most cases this is accomplished by mechanical means, the day is approaching, I believe, when the opening and closing of these doors will be handled electrically, by means of a photoelectric cell. These devices are already upon the market. The mere interruption of a beam of light is sufficient to set things into operation, so the thing is easily possible.—H. E. J.

A battleship seems the very embodiment of power; but if it were not for its protective coating of paint, its usefulness for offense or defense would rapidly decline.

Hanson-Munning Electrolytic Bright Dip

The Hanson-VanWinkle-Munning Co., Matawan, N. J., has published an 8-page booklet, 7¼x5-in. in size, describing the Hanson-Munning Electrolytic Bright Dip Process, a process for electrolytic pickling. This booklet describes how this material prevents corrosion, its use in the finishing of chromium-nickel alloy steels, in galvanizing operations, as a preparation for plated finishes, as a preparation for lacquering, painting and enameling, and its use in the inspection and machining of metals.

Metal Finishing Book

The Finishing Research Laboratories, Inc., 736 Lyman Ave., Oak Park, Ill., is now offering to the trade a handbook on modern metal finishing entitled, "Practical Japanning and Enameling." This book includes information on finishing materials and equipment for bake finishing; also heat insulation, rubbing machines, sandblasting, special finishes, metal cleaning, mechanical decoration, silk stencils, new application methods, lithographing, and water japanning. "Practical Japanning and Enameling" contains 272 pages, is attractively bound in Fabrikoid lettered in gold, and is of a convenient size—6¼x9¼-in. Price $3.50.

A Low-Bake REZYL for Primers, Surfacers and Enamels

Rezyl 110 is one of the Rezyls that are proving highly advantageous to manufacturers of bake-type primers, surfacers and enamels.

Durability is assured because Rezyl 110 is opaque to ultra-violet light rays and resists their destructive action.

Formulation is simplified because Rezyl 110 is completely and rapidly soluble in coal-tar and petroleum hydrocarbons, oils and turpentine. This property makes Rezyl 110 particularly adaptable for quick drying types of industrial paints.

In many Nitrocellulose lacquers where toughness, adhesion and durability are essential, our synthetic Rezyl 110 is both suitable and economical. Write for samples of Rezyl 110, mentioning the name of your lacquer supplier, and indicate which of our other products you are interested in: Rezyl Balsams for plasticizing; Teglac for furniture finishing; Ethyl Lactate, the high-boiling solvent; and Nitrocellulose.

Rezyls are now offered with broad rights to use under United States patents.

Sole Sales Agents for the Nitrocellulose produced by our Subsidiary, American Powder Company.

Industrial Chemicals Division

American Cyanamid Company

535 Fifth Avenue New York

Why Machines in Color Improved Production

By
T. C. PROCLIER

The president of a shoe manufacturing concern discovers that the use of a contrasting color for machines does away with shadows and relieves the worker's eyestrain; accordingly, black machines were repainted

WHEN A. W. DONOVAN, president of the E. T. Wright Co., Inc., Rockland, Mass., makers of the Arch Preserver shoe for men, noticed a workman having trouble with his machine, a new idea of far-reaching importance to the paint and finishing industry was born. Looking for the trouble, he saw that the worker was making a black shoe on a black machine. The exacting operations required keen eyesight, and the lack of color contrast between shoe and machine apparently was causing eye strain which seemed to be at the root of the trouble.

"Let's paint that machine green," suggested Mr. Donovan, "and see if that will help."

Accordingly, the machine was painted green; next day the workman noticed that he did his work far easier and without a thought of eye strain.

Other workmen took up the idea and asked permission to have their machines painted, which was granted. The color idea was received with such enthusiasm that Mr. Donovan called a meeting of employes at which color schemes for various sections of the factory were adopted.

The effect was instantaneous. Production mounted and workmanship, always of a high standard, was immediately improved. Psychologically, there was noticeable a new tendency to personal neatness—a more friendly attitude of the men toward their employer. Individual efficiency was increased, with enlarged earning capacity. Accidents were reduced 66⅔%—as determined by a careful check of the accident ratios of similar periods in previous years.

Today, in the Wright factory, there is a battery of staple-lasting

This machine, the dust hoods and exhaust piping are painted "foam" green, also the rack at the left, to minimize eye strain.

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Trade Name

Synthetic Enamels

(Baking or Air Drying)

The paint manufacturer's closest approach to a porcelain finish in enamel.
Has unusual adhesion — hardness of baked finish — high gloss or dull — quick bake. High solids give exceptional build and toughness without brittleness.
Available in one coat white, black and solid colors for metal furniture, refrigerators, etc. Technical advice gladly furnished.

It stands the test!

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NEWARK, N. J. and DETROIT, MICH.

DIPPING LACQUERS

By absolutely novel formulation, we can now present a line of dipping lacquer enamels of most unusual qualities.

Irregular shapes and long and complicated pieces are covered solidly, without bead or sag: in one coat for most colors. Wire objects are perfectly finished in incredibly economical fashion.

For many industries, this will be as important a development as the spray gun, which it will replace for a diversity of purposes.

Allow us to give you fuller details by writing, with description of your product, to

THE VARNISH PRODUCTS CO.

12900 Berea Road
Cleveland, Ohio

machines finished in orchid; a row of heeling machines in orange; heel-and-edge scouring machines in green; edge trimmers in ivory. Throughout the factory one meets the exhilarating effect of color.

What significance has this for the finishing industry? It means tremendous new sales outlets for finishes throughout the factories of the nation. The trail blazed and benefits amply demonstrated in the Wright factory are bound to be followed by others who are interested in improved conditions and better workmanship on the part of employes.

The color idea is worthy of adoption for the safety feature alone, for through bright color contrasts, dangerous moving parts are made so visible that accidents are reduced to an unthought-of minimum. In a nutshell, color is sure to become widely used in industry for the simple reason that it pays both the employer and employed.

Refinishing Fokker Aircraft

(Continued from page 28)

The danger of gas sanding over the surface of any project finish in most of the new processed combination gum lacquers is too great to risk, unless previous observation and experience warrants it. Gas sanding over an old surface finished in clear or high gloss lacquers will start checking almost immediately when exposed to the elements, as an airplane is.

Water with a small amount of U.S.P. or C.P., deturgent added will make an ideal liquid. The deturgent will kill any chance of fungus growth, should the liquid leak through the seams of the plywood. It will also clean and cut better than plain water under the abrasive action of the sandpaper. Do not let this solution run down the wing as the streaks it will leave will show through all coats applied over it.

The use of No. 100 waterproof sandpaper in a sanding machine is ideal, as the speed of the reciprocating discs reduce the harsh action of this grit to about No. 150 or No. 180 grit, as when applied by hand.

The lower side of the wing will have to be hand-sanded unless two men work the machine together—one man running the sander and the other keeping the surface wet as the work progresses. The under side is always in much better shape than the top side, and hand-sanding is almost always sufficient and faster, as scuffing is usually enough.

Gluing Tapes

Never glue or cement the tapes before sanding and cleaning, as if the sanding is rushed at all, the freshly-cemented tapes will not hold if torn into by the paper.

The cementing of tapes may follow right after the sanding, and they are usually dry enough for their spot sanding in about four hours. These must be well sanded, and the cement feathered out on the edges the same as though it were a spot surfaced piece of work.

Run ship out into sun after gluing tapes if possible. Glue drys faster and the pores of the wood expand, and the application of wood is more successful.

(To be continued)

John Raabe of Sapolin Dies

John Raabe, vice-president and treasurer of Sapolin Co., Inc., 229 E. 42nd St., New York City, died suddenly March 16. He was 61 years old and for 40 years was an executive of Gerstendorfer Bros., which several years ago changed its name to Sapolin Co., Inc.

No excuse for lazy-man stirring when you specify deliveries of pigmented finishing materials in Farrington Mixer-Drums.

A FARRINGTON MIXER-DRUM

Is a mixing machine which breaks up 55 gallons of 18 lb. paint after it has settled for a year and brings it to laboratory mix in less than 20 minutes.

One man easily elevates full mixer-drums or barrels with this TILT-SKID.

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Two RUST-RESISTING Steel Sheets Coated with Spelter (Zinc) and Heat-Treated after being Coated. Have Etched Surfaces to which Finishes Adhere Firmly.

Sample and Booklet on Request

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Division of Continental Steel Corporation — General Offices, Kokomo, Indiana
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Manufacturers of: Black, Galvanized, Long-Terne and Special Coated Sheets, Roofing and Kindred Products; Billets, Rods, Wire, Nails and all types of Fence. (133)

Questions and Answers

This service department is conducted to meet the reader's need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer any further comments, or recommendations pertinent to subjects mentioned

Undercoat for White Lacquer

We are using a dark oxide oil primer under all colors of lacquer. We like this primer fine for our line of work, but it causes considerable trouble when used under white. Now, if we could get a white oil primer or a white undercoat like the undercoat for enamels, it would be a great help. Is it necessary to use such a primer or undercoat? If so, who makes it?—A. S. Jr.

There will always be trouble in producing uniform color when white lacquer is sprayed directly over a dark oil primer. If you will spray a coat of light gray or ivory surfacer on the parts, allow this to dry thoroughly, and then spray the white lacquer, you will find, I believe, that the trouble will be eliminated.

White lacquers do not contain sufficient pigment to cover the dark primer; hence two coats of this material would not correct the trouble. The surfacer coat, in my opinion, is better under white lacquer.—P. C. Bardin.

Dip Finishing Problem

We have a dipping problem that we will appreciate your advice on. The parts are of wood and some pieces are approximately 2 x 4-in. in size and 7-ft. long, and other parts are shorter. We will appreciate your advising the best method of hanging these parts after they have been dipped.—N. R. S. L. Co.

I have been in many plants where toys, juvenile furniture and other wood products are dip-finished. The equipment depends upon the volume of production, type of product, and the physical properties of the building in which the finishing is done. Of course, if the volume of production is sufficient, an overhead conveyor provides the best means of supporting the pieces while draining and during the drying period. Suspended from the conveyor are racks or arms which will accommodate several wood parts. These racks are designed to keep the wood parts from contacting other parts. Some of the larger plants have power conveyors; however, manually propelled conveyors may be used effectively.

Naturally, shaped parts and subassembled pieces must be hung to drain in a position that will prevent the collection of finish material in corners, crevices or uneven surfaces. From the folder showing some of your products it is evident that many of the pieces have either hardware or screw-holes from which the pieces may be hung.

If some pieces do not contain

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ENAMELS
M & W Specialties
Some of the principal Specialties designed for a particular purpose and to M & W Quality Standards follow—
For METAL
Hardware Lacquer
Silver Lacquer
Water Dip Lacquer
Lacquer Enamel
Pearl Lacquer
Prismlac
Cement
Primer
Surfacer
For WOOD
Clear Wood Lacquer
Flat Wood Lacquer
Clear Sanding Sealer
Dipping Lacquer
Dipping Lacquer Enamel
Broom Handle Lacquer
Pencil Enamel
Sanding Surfacer
Thinner
It is possible that one of these or one of many additional items will fill your requirements to better advantage.
You are invited to write our nearest office for samples and quotations.
MAAS & WALDSTEIN CO.
Executive Offices and Plant
438 Riverside Ave. Newark, N. J.
Chicago Office and Warehouse
1115 W. Washington Blvd.
Los Angeles Office and Warehouse
2416 Enterprise Street
The border of this advertisement is a photographic reproduction of M & W Prismlac

any suitable place of anchorage, a small screw-eye can be temporarily inserted in the end wood. After the finishing operation is completed, the screw-eye can be removed. Take for instance the legs of your sand box No. 1; either a small screw-eye or wire brad may be placed in the end wood about the center of the circle edge. In the legs of your sand box No. 3 the means of support may be placed in the top edge of the leg which is later covered by the seat. On the 2 x 4-in. by 7-ft. pieces the screw-eye may be inserted in the end of the piece.

With the screw-eye in place the piece is dipped, then the operator, using two pieces of coarse sandpaper, lifts the piece from the tank to the overhead support. Marks from contact with the sandpaper will quickly disappear as the enamel flows out. On some of the parts it may be necessary to do a little experimenting to determine the correct position to obtain the best results.

The height of the ceiling in your finishing room will determine whether the dip tanks and drain boards are above or below floor level. If production does not warrant the installation of conveyors, iron pipe supports may be placed over the drain boards, and spaced at suitable widths to accommodate two or more rows of parts. If this type of support is used, you may find that it is advisable to use a device similar in design to an ordinary coat hanger for some parts, and another similar in shape to two coat hangers placed at right angles to each other. On the latter it may be possible to support four pieces from the four ends of the hanger, and one piece from the center.

Another idea that may be worked out is a sectional conveyor which holds a definite number of pieces, the section being mounted on wheels which travel over the two flanges of an I-beam. After the pieces have drained thoroughly, the entire section loaded with parts is advanced away from the drain board and passed into the dry room, if forced drying is to be employed.

There are any number of ideas and devices that may be developed, but it is difficult to suggest anything definite when I know so little of your product, methods of production, and the finishing schedule to be used.—P. C. B.

Dark Oak Wax Finish

We are interested in learning how to make up a dark oak wax finish. If there is any information you can give us on this particular finish, we would appreciate it very much. The finish is of the same type used on waxed dining room suites.

There are two methods of obtaining the dark oak finish you refer to. I shall give what I consider as the better method first:

Sponge the wood surface with clear water and allow it to dry for two or three hours. Sand with No. 5/0 sandpaper. Then spray on a coat of dark oak (water) stain*, which is available in dark green, brown, and black mission oak. Immediately following the application of the stain, the wood surface should be "ragged off," using a damp cloth wet with clear water. This "ragging off" removes any excess

*Or a wateroil or new, non-grain-raising, penetrating stain.

OTHER DOLAN PRODUCTS

Quick Drying Fillers

Wateroil Rubbing Oils
(Eliminate bloom)

X-L All Drawer Coater

Sealacquer

National School Board Brown Stains and Fillers

Quick Drying

WATEROIL

REG. U. S. PATENT OFFICE

Often Imitated but Never Duplicated

WATEROIL is made entirely from water colors, the newest and most practical stain on the market, with universal acceptance almost overnight.

Non-bleeding—non-fading
No raising of grain
No blistering of veneers
Eliminates wash-coating and sanding

WATEROIL may be sprayed, brushed or dipped. Regularly furnished in four standard colors: light and dark walnut, red and brown mahogany. Allow us to prove to you that WATEROIL is really the stain to meet your requirements.

Fully Guaranteed—Try It Out!

V. J. DOLAN & COMPANY, Inc.

Wood finishing materials of "Unquestionable Quality"

1830-32 N. LARAMIE AVENUE CHICAGO, ILLINOIS

DURAL
TRADE MARK REGISTERED

ONE COAT LACQUER

HIDING	Covers solid in one coat—any color.
APPLICATION	Can be brushed, dipped or sprayed.
APPEARANCE	Has a high lustre and flows out perfectly.
ADHESION	Excellent on smooth metal.
USES	On toys, novelties or any product to be finished with one coat only.
COST	Since a Durable finish can be obtained with one coat the cost is very moderate.

For Full Information on Dural One Coat Lacquer Write:

SEWALL - PAINT & VARNISH - COMPANY

KANSAS CITY, MO. — DALLAS, TEXAS

stain, and it tends to uniform the color of the entire surface.

Allow the surface to dry overnight. Next spray a very thin coat of lacquer sealer. Allow two or three hours for drying; then sand with No. 5/0 sandpaper. After cleaning, spray a second coat of lacquer sealer on the surface and allow this to dry three hours. Sand with No. 4/0 sandpaper; then smooth the surface with No. 2/0 steel wool. Clean thoroughly; apply a coat of wax; let stand 15 minutes, and polish. If a heavy bodied polish is desired, use a paste wax; if a light bodied polish is desired, use a liquid wax.

The second method, which is less expensive but not quite as satisfactory as the first, is as follows:

Spray on to the surface a coat of oil stain (colors in this same as above water stain). Wipe off and allow to dry overnight. Then apply two coats of lacquer sealer, allowing time between coats for drying; then follow the same schedule as given above for the water stain method. This finish will not be fast to light, and it is impossible to obtain the same depth of color with the oil stain; therefore, the first method is preferred if a real quality finish is desired.—P. C. Bardin.

Wood Plates for Graining

We want to do some imitation graining and understand that it is possible to prepare a wooden surface so that it can be used as a graining plate. What we want to use is something like a quartered oak surface for the graining plate. We have the necessary scrapers, rolls, etc. We would like to learn how to prepare the wooden surface so it can be used as a plate. We understand that it is possible to etch the surface of the wood by using a strong caustic solution which eats out the soft wood. Whether this information is wrong or whether we have not done the job just right we don't know, but we don't get a very satisfactory finish and would appreciate information on how it should be done.—V. S. Co.

I have seen walnut and mahogany used for this purpose and can see no reason why quartered oak could not be prepared with equal success. However, in using any wood for this purpose it is essential to select an "open grained" piece of veneer in which the pores are plainly visible.

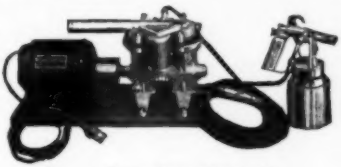
After selecting the veneers, enough should be obtained so that they may be matched to secure a suitable figure design in the finished panel. Using these veneers for the face, the panel should be built 5-ply to obtain a perfectly flat surface which, of course, is highly essential to good work in transferring the grain design from the wood to the metal.

The panel should not be sanded —or only lightly sanded to remove the paper tape on the face veneer. If the face veneer is sufficiently open grained, it is sometimes possible to prepare the surface by merely rubbing it parallel with the grain with a medium grade of steel wool.

Another method is to place the panel in a horizontal position and flow commercial acetic acid over the surface. The edges of the panel should be protected by the application of oil or lacquer to prevent absorption of acid, and it should be borne in mind that too great a quantity of acid will

Here is the secret of
LOWER FINISHING COSTS
Super Spra-more "55"

You'll be interested in learning what other manufacturers have done toward reducing finishing costs with the Super Spra-more "55". Crown has helped scores of manufacturers to simplify finishing problems, to effect definite savings in both time and materials, through modernizing present methods and advanced principles of material application. This information is yours for the asking, and it may point the way toward added economies . . . economies that may afford the extra margin necessary to win a greater share of the business for your product. Fill out the coupon, NOW!



Price, Complete $78.50

COUPON

CROWN SPRAY GUN MFG. CO.
1218 Venice Blvd., Los Angeles, Calif.

Gentlemen:
Kindly send me details of Super Spra-more "55" and information regarding the reduction of finishing costs.

Name.....

Address.....

Type of Product.....

CROWN SPRAY GUN M'F'G. CO.
1218 Venice Blvd., Los Angeles, Calif.

Stocks of Crown Equipment carried in Eastern and Middle Western States

Weather-OMeter

Standardized Weathering, as created in the Weather-Ometer is today used for making deterioration and breakdown tests of Industrial Finishes by associations of paint and varnish manufacturers and various makers. Similar tests are made and results published by the Bureau of Standards. The use and recognition of accelerated weathering for such determinations is the strongest possible voice of authoritative approval of Weather-Ometer. There is no problem involving the pre-determination of weathering reaction of an organic protective coating that Weather-Ometer cannot meet for you. A new and complete treatise of this subject has just been issued. Ask for your copy of Bulletin I. F. 3.

We are also Creators and Distributors of Fade-Ometer—Standardized Sunlight; Launder-Ometer—Standardized Machine for Laboratory Washing Tests; Wear-Ometer—Standardized Wear Test Machine.

New York—Boston—London—Berlin—Osaka

ATLAS ELECTRIC DEVICES CO., INC.

361 W. SUPERIOR ST., CHICAGO, ILL.

NEW.....

An improved, electric portable belt surfacing machine for wood or metal.

Compact, simple, powerful, lightweight and fast, SKILSAW SANDER offers advantages never available before. It weighs only 18 lbs., is 7" x 14" x 9" high, perfectly balanced, convenient to handle and easy to use.

Finest abrasive belts furnished in all grits, are automatically centered and can be removed and changed in 10 seconds—SKILSAW SANDER gives an extra smooth finish. "RIPPLES" or uneven surfacing is impossible. Try it on your own work. A demonstration is free. Mail the coupon today.

SKILSAW SANDER specifications are:

Frame — Aluminum, die-cast for accuracy, strength and lightness.

Motor—½ H.P. Universal for D.C. or A.C., 25-60 cycles.

Switch — Two pole toggle in handle.

Gears—Helical nickel steel heat-treated.

Net Weight—18 lbs.

Bearings—High-grade ball bearings throughout.

Pulleys—2½" diameter.

Belt Size—4½" x 26 5-16".

Belt Speed — Free 1700 ft. per minute.

Size over All—7" x 14" x 9" high.

SKILSAW, Inc.,
3324 Elston Avenue, Chicago

Gentlemen: We will gladly watch a demonstration of SKILSAW SANDER without obligation on our part.

_____

_____

_____

not help the process, but will destroy the durability of the panel. Acid should be allowed to remain on the surface only long enough to burn the comparatively soft textured porous areas.

I suggest selecting several pieces of veneer from several flitches, cut them into say 24-in. lengths, and experiment with the first method mentioned. If this does not produce a satisfactory surface, the second method may be tried. This experimental work may be performed with the veneer before the panel is glued up with waterproof glue.

If the veneer is properly selected and the panel built correctly, it will remain flat; and if care is used in preparing the veneered surface, it is possible to obtain good results from these wood plates. If such a plate is taken care of and does not become scratched, it may be successfully used for transferring wood grain to metal for at least a year.

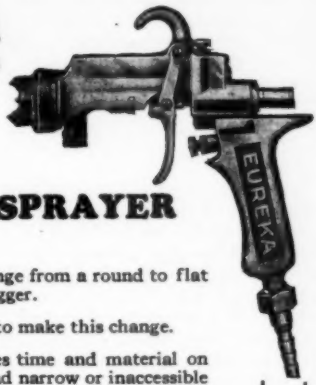
I have heard of these wood plates being used daily in the graining operation for over two years. Of course, the texture of the wood and the care taken of the plate will determine its period of usefulness.—P. C. Bardin.

I believe your trouble is either in your rubber rolls or in the caustic acid which you are using, or whatever you may be using—or there may be too much oil or thinner on your graining compound. I assume when you transfer the grain on your steel pieces it leaves a smear or an unfinished place. Before you study your wooden plate first study your graining color, or whatever you are using.

Really the method you are using will be more simple if you use

EUREKA

THE ORIGINAL SPRAYER



The New—

DUAL VALVE SPRAYER

allows the operator to change from a round to flat spray by the pull of the trigger.

No adjustments necessary to make this change.

This new development saves time and material on products that have large and narrow or inaccessible surfaces.

Write for literature showing this and other new exclusive Eureka developments

EUREKA PNEUMATIC SPRAY CO.

Note: New Address 128 White St., New York

CELLUSEALER

A perfect undercoat and sealer for varnish or lacquer — will not affect stain or filler nor raise the grain — will not blush nor bloom—sands sharp in 10 minutes—recoats in one hour — is waterproof and sunproof — produces more body and is more economical.

Doubtful? Order 5 gallons at the drum price, give it a thorough test. If it does not prove satisfactory, return the unused portion for full credit.

Southern Lacquer Co.
BALTIMORE-MARYLAND

both rubber and composition rolls. When using rubber or composition rolls, be sure to clean them before you use them again; they should be dipped in naphtha and all the graining compound cleaned off. Be sure the rolls are dried before you use them over your wooden plate again.

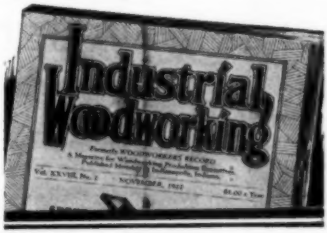
I believe you can etch the surface of your wooden plate by using a solution of sulphuric acid—using 5-oz. of this sulphuric acid to one quart of water; apply with a brush. It may be necessary to employ this solution, repeatedly three or four times; wash the wooden plate with warm water and with gasoline afterward. This solution is used to etch walnut plates.

Some plate makers prefer to use oxalic acid very strong to draw the graining compound off the wooden plates. If this does not work satisfactorily, use hydrochloric acid in the proportion of 4-oz. to one quart of water, and apply to the wooden plate. Be sure to clean it off with water and gasoline; also be very careful when using these formulas for they are injurious to the hands.—Geo. Moskos.

We have read over the question and answer and have no objection to its publication. There is nothing new in the treatment and use of such boards, as this has been done for the last 30 or 40 years. This method of graining, however, was discontinued years ago when other processes giving superior results were developed.

We have recently made an extensive investigation and found that in a number of plants, where graining is done, wood boards such as described in your articles, have been substituted for the copper

Helpful for your woodworking department—



SEND FOR COPY OF THIS MONTHLY PUBLICATION

Management, production superintendents, foremen, production and maintenance engineers follow it closely each month for the latest information on woodworking production problems, the new machines and improved methods, to cope with presentday competition.

PRACTICAL PUBLICATIONS, INC.

601 Walsin Building **Indianapolis, Indiana**

Kindly mention INDUSTRIAL FINISHING when writing advertisers

plates which we market, but that these boards have been used *with* various other devices, equipment and production methods which infringe upon the numerous patents and patent applications owned or controlled by this company; when this is done, we do object.

Obviously, it is not our intention to interfere with any processes for either the reproduction of wood grain or marble that do not infringe our rights. On the other hand, our company has spent large sums of money in developing our processes and must, of necessity, protect its rights wherever infringed, and cannot allow the use of various production methods and processes *to be combined* with other processes even though they may substitute in part wooden boards or similar plates and combine them with various other patented items and production methods which belong to us. It is, therefore, our intention to prosecute such infringement wherever it is found in the protection of our rights.—Oxford Varnish Corp., Detroit, Mich.

The nozzle of a spray gun should be so designed that the stream of finishing material through it is entirely surrounded by the escaping compressed air; the idea of this is to confine the spray as closely as possible and eliminate waste.

Most of the highly finished metal wares marketed today rely as much upon their appearance as upon utility for their sales appeal. For this reason, every precaution should be taken to protect the finish, and to insure its continuance.

Represents V. J. Dolan & Co., in New England States

Mr. J. H. Edmonds is now representing V. J. Dolan & Co., of Chicago, in the New England states, with headquarters at Rochester, N. Y.

Alsop Progress; Mixer Catalog

The Alsop Engineering Corp., 39 W. 60th St., New York City, (a complete line of power mixers, filters, and glass-lined tanks) announces that 1931 is the company's 10th anniversary. In 1921 this concern occupied two small rooms. Today the offices and service department alone occupy over 9,000-sq. ft., which includes the largest display room in New York for liquid handling equipment—all in addition to a large factory in the Bronx, N. Y. A new catalog showing plant installations is now ready.

School of Spray Painting

The DeVilbiss Co. announces the establishment, at its plant in Toledo, Ohio, of a school designed to instruct DeVilbiss users in the care, operation and use of spray-painting and spray-finishing equipment as well as in the accepted methods of securing all desired results.

The school is open to owners, users or distributors of DeVilbiss equipment. There is no cost connected with it other than transportation and living expenses. The student should first make application to The DeVilbiss Co., Toledo, Ohio. Upon approval he will be assigned a definite date of entrance. The minimum length of the course is three days. The company prefers, however, that students remain one week as this allows ample time for thorough study. During this period each student is given thorough instruction and practice in all phases of spray-painting and spray-finishing.

The first part of the course covers the mechanical features of spray painting and finishing equipment. The student is next taught to operate and service the equipment. Finally he specializes in actual spray-painting, spray-finishing, decorating or refinishing work.

New classes start on Monday of each week. The number of students in every class is limited, so that each student may receive individual attention. Thus early registration for any desired week is advisable.

A marked improvement in the work of their men upon completion of this course has been reported by users of spray equipment. Students themselves testify to the value of this course, many of them remaining for a much longer period than the minimum to receive additional instruction.

New Materials and Equipment

Presenting briefly, certain outstanding features of new or improved materials, supplies and equipment which have been developed and made available for use in modern industrial finishing departments

Clamptight Covers for Pressure Tanks

The Paasche Airbrush Co., 1921 Diversey Parkway, Chicago, Ill., presents to the trade clamptight-cover pressure tanks which require no wrenches for putting on and tightening or loosening and removing the lid. Just turn the eccentric over and the cover is on or off—in a few seconds—and tight at 100-lbs. working pressure.

The air pressure is controlled by an air-regulator and gauge, a unit especially designed for air-brush use and for withstanding heavy-duty service. The phosphor diaphragm is compressed into position . . . . this eliminates uneven temper of the diaphragm and prolongs the life and gives uniform regulation of air pressure continually. Material supply is strained by a special double vertical strainer, preventing skin and chunks clogging the paint line. These tanks are made from one-piece pressed steel, and leaded to prevent corrosion; easy to clean.

Has quick clamptight feature; several size containers

New Eureka Spray Guns

The Eureka Pneumatic Spray Co., 128 White St., New York City, announces new model spray guns in a line which consists of the modernization of the old No. 13 Eureka sprayer . . . more sturdily built, lighter in weight, with a more comfortable handle, a renewable valve, and other improvements tending to save time and increase production. This sprayer is now known as the No. 10.

A new model, known as the 10L, has a removable top, so that in changing from one color or material to another, it is not necessary to wash out the sprayer. The materials are put into separate containers with cover and fluid assembly attached, so changing from one to the other is done in five seconds, by a twist of the hand. The No. 10 principles are used in this model throughout, with the exception of the removable top feature.

A new art brush that is very simple in construction and operation and gives a spray as fine as ⅛-in. up to 2-in.

The big boy of the family is the No. 50 dual-valve sprayer, controlling the flat or round sprayer in the pull of the trigger. This gun also has a removable fluid assembly in the form of a cartridge, as shown in the accompanying illustration, so that changing from one material or color to another is done very quickly, without washing sprayer. This type is used with three or five gallon pressure-feed or overhead gravity-feed.

The features of the dual-valve are particularly effective where large surfaces are to be finished

Has removable fluid assembly to facilitate quick changes from one material to another; a new catalog tells about it.

(requiring the fan spray) in combination with narrow surfaces or inaccessible corners, which require a round spray to eliminate waste of material or flooding of more exposed surfaces. As the operator is spraying, he uses the flat spray for large surfaces, and by loosening his grip on the trigger, he obtains the round spray for finishing inaccessible corners and narrow surfaces. This is accomplished without the necessity of making any adjustments on the gun.

Decorations are

POWERFUL SALESMEN

Many of our customers say: "It's the *decoration* that sells our product!"

Color...Design...Artistry—they attract—they interest—they sell. Quietly, but insistently, they sell.

When your product is in a merchant's display, among dozens of other items—then is when you most need a salesman, to win attention and create desire for *your* product. Then is when decorations will work for you, will sell for you. Then is when correct decorations will give your product a decisive edge in appeal.

Use Meyercord decorations and employ this extra sales force at a minimum rate. Use the expert Meyercord Art Advisory Service—free to users of Meyercord decorations—and insure your decorations of being *correct*.

Meyercord decorations have helped build sales volume for hundreds of firms. Put them to work on your sales force at once and they'll get business for you.

THE MEYERCORD CO.
120 S. LA SALLE ST.
CHICAGO

ADVANCE-ADVANC

ADVANCE-ADVAN

GIVE

Soligen

Driers

A CHANCE

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to prove themselves. There must be good reasons for their widespread use.

WHY

do most progressive and scientific varnish and paint manufacturers use Soligens?

DO YOU KNOW

that their metal content is all chemically combined and wholly soluble in the oils, thinners and volatile solvents you use?

DO YOU KNOW

you can make up clear liquid driers by simply dissolving Soligens in part of your thinners and then after cooking your batch add your drier to the cooked varnish either while cooling or afterward? This property alone saves the cost of many pounds of Soligens.

Advance Solvents and Chemical Corporation

245 Fifth Ave., Dept. L
New York, N. Y.

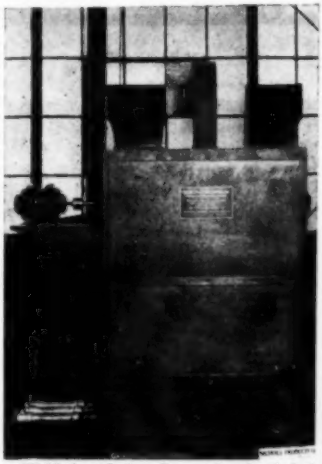
CE - ADVANCE - AD

Unit Type Heater

In its Bulletin No. 109 the Nichols Products Corp., 12953 Greeley Ave., Detroit, Mich., announces a new line of gas-fired air heaters of the unit type for industrial heating purposes. The advantages listed include "uniform temperature at the working area, ventilation, control of room temperatures, low cost of installation and operation."

The unit is thermostatically controlled and fully protected by safety devices. Safety protection against failure of gas is obtained through the gas electric pilots wired to the gas valve. If the pilots are extinguished, the circuit is broken and the gas valve closes. In case of electric failure the relay automatically breaks its circuit to the gas valve and thus the entire unit is shut down.

The Nichols unit heater can be relocated to suit alterations in the building or in a department. It is



Welded angle-iron frame; insulated sheet metal casing; removable sections; specially designed fans.

also adaptable to changes, since sheet metal pipes may be connected to the discharge outlets in order to convey warm air to a newly built shop office or room.

Drying Speeded Up By Small Traveling Fans

The Reynolds Electric Co., 2650 W. Congress St., Chicago, Ill., announces a new drying system which is "a radical departure from present or former methods" and which is claimed to offer remarkable economies and efficiency.

Quoting from the Bulletin No. 1001: "A motor propelled carrier running on a track equipped with motor-driven fans traveling first in one direction then in the opposite (automatically reversing), circulates fresh air over the commodity to be dried. The circulation of air is uniform in all parts of the drier; dead spots or air-pockets are avoided. Due to the fact that the fans are not blowing air on the material continuously, the moisture has a chance to come to the surface and be carried away, thus making the drying process positive and complete.

"The construction of the cabinet or housing is simple; the drying operation is performed by small fan motors . . . . uses ¼ and 1/6-h. p. motors; some very large systems have a total connected load of less than 2-h. p. Only a minimum amount of heat is required. Products in process are dried thoroughly and uniformly."

The company's engineering department is in position to furnish working drawings and complete specifications for the installation of drying systems, and to suggest the latest and most improved methods for any particular drying problem.

Reduced from 10" X 14"
Clear Crystal Lacquer Panel

ANTIQUE
CRYSTAL
LACQUER

For Finishing

Wood
Metal
Glass
Fibre
Paper
Composition

Clear
or
Colored

Write for Sample Panel

HENRY V. WALKER CO.
Elizabeth New Jersey

Hy-Speed

EXPLOSION-PROOF ELECTRIC MIXERS

Clamp to *any* tank
and mix *all* liquids

MIX QUICKER

LAST LONGER

COST LESS

Note Patented "Push Pull" Propeller Action.

ALSOP

ENGINEERING CO.

39 West 60th St. New York

AUTOMOTIVE FINISHING COMPLETELY COVERED

A detailed study of modern methods of automobile painting; carefully written in non-technical terms. This book contains much useful information, both for the shop owner and finisher; explaining methods of preventing checking and cracking, water spotting, peeling, chipping, flaking and many other helpful ideas.

ILLUSTRATED—GOOD BINDING

16 CHAPTERS.....PRICE $3.00

Remittance with order, please

INDUSTRIAL FINISHING

602 Wulsin Bldg., Indianapolis, Ind.

Clear Buffing Lacquer

The Agate Lacquer Mfg. Co., Inc., 11-13 43rd Road, Long Island City, N. Y., announces a clear lacquer which, when applied over enamels, may be buffed thus producing a similar finish to vitreous enamel. This material has been adopted by manufacturers of compact boxes, cigarette lighters, cigarette cases, etc., as a buffing lacquer.

According to the manufacturer: "The necessary operations are as follows: One coat of lacquer enamel (any brand); allow to dry for one hour. Apply one coat of Agateen No. 10 lacquer and allow to dry for one hour (air drying). The work is now ready to be buffed, using a 6-in. flannel buff on a lathe doing anywhere from 1600 to 2200-r.p.m. As a cutting compound, any Vienna lime will do.

New Water-Soluble Resin

According to information furnished by Glyco Products Co. Inc., Bush Terminal Bldg. No. 5, Brooklyn, N. Y., some newly discovered properties of Aquaresin (a new water-soluble resin) will be of interest to the trade.

By mixing water solutions of Aquaresin and water-soluble gums like gum arabic, glue, etc., in suitable proportions, films or coatings of varying degrees of hardness and flexibility are obtained. This is of interest in special adhesives.

For a long time much research has been carried on by manufacturers of photographic films, collodions, lacquers and gelatin products to obtain a product which would be mutually compatible with gelatin and pyroxylin or water-insoluble gums and resins such as copal. This has been accomplished through the use of

Aquaresin. The latter is dissolved in methanol, anhydrous alcohol, cellosolve or methyl cellosolve; the water-insoluble gum or pyroxylin is dissolved in suitable mixtures of these solvents. The two solutions are compatible and are mixed for use. Such solutions are arousing interest in special adhesives for cellophane, glassine and other special papers, leather and textiles.

In conjunction with rubber latex Aquaresin gives additional tackiness to the deposited rubber film.

Pipe Line Strainer

The Sarco Co., Inc., 183 Madison Ave., New York City, announces a self-cleaning straitway type strainer (for gas, water, oil, steam, compressed air, etc.) that has a cast iron body with perforated

Made in all sizes from ¼-in. to 8-in. with screwed or flanged connections.

cylinder placed at such an angle as to offer the minimum obstruction to the flow of gas or liquid, but allowing ample cleaning space. The standard screens are made of perforated brass, but monel or other metal screens can be supplied to any specification.

This strainer can be placed in horizontal or vertical pipe lines or at any angle, and the blowoff connection permits the strainer being cleaned instantly—merely by opening the valve.

Training man-power is comparatively easy; its full development extremely difficult.

Have You Received Your Copy of

"GOOD NEWS?"

R150 Chemical Cartridge Respirator

"Good News" . . . our latest broadside, brings you complete, detailed information on more than a score of different types of respirators — and sweeping *price reductions.*

Mail the coupon. Get the utmost in nose, throat and lung protection—**AT MINIMUM COST!**

Pulmosan Safety Equipment Corp.
176 Johnson St., Brooklyn, N. Y.

Send me your new broadside "Good News," and revised list of lower prices.

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Address.....

.....(I. F.)

Industrial Finishing
MAGAZINE

Issued fifteenth of each month. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

PRACTICAL PUBLICATIONS, Inc.
Publishers

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EDITORIAL

Style and Design Institute

Organized recently at the Art Center in New York City, the Industrial Institute (65 E. 56th St.) has for its purpose the development of better native designers and national leadership in design and style. It is really an American declaration of style independence. It has the financial support of the Carnegie Corporation, together with a group of prominent citizens. Alon Bement is the director.

The immediate services of the new institute will consist of lectures and conferences by authorities on design, styling and merchandise. An expert in these lines will be provided for commercial firms at the actual cost, it is announced.

A research department to cooperate with industry and to collect data on the relation of design and style to merchandising has been proposed. A library of design history, in which will be kept permanent records or case histories from the artistic as well as the production and sales point of view, it is also proposed to establish.

Among the sponsoring organizations are the Chambers of Commerce of New York, Brooklyn, Newark, Jersey City and Paterson.

Machine Tool Gray

The fact that color, wisely used, has a practical utility value even in connection with the painting of machinery is now widely recognized. For years machines for factory service were painted black, a very practical and economical color for the machinery manufacturer, but not always the most practical or desirable for the users of certain machines.

The general movement toward improving the lighting of factory interiors and the subsequent adoption of the practice of painting factory interiors white naturally had the effect of turning attention to the all-black machines—the black work-stations in otherwise attractive, white, or very light colored, well illuminated surroundings. A decided trend away from black resulted and machine builders began to send out machines painted in gray—various shades of gray.

To obtain uniformity, many users then adopted standard colors of their own, and ordered new machines painted to suit their own idea of color, even specifying the particular brand of paint to be used. Then followed interminable and costly confusion. Discussion of the situation developed a strong sentiment in favor of having a standard color for all machine tools. Paint manufacturers

naturally favored the idea of a standard color which would permit of quantity production instead of the small scale production of special colors.

A joint committee of paint manufacturers and machine tool builders recommended a color made of pigments which will not be affected seriously by alkalies and acids in oils, cutting compounds, etc. Members of the National Machine Tool Builders' Association adopted this color as their standard.

The next step was to establish this color as standard practice. Some users continued to ask for the special colors which they themselves had decided upon for their own shops. But, as users find that they can get uniformity of color and a better paint for that purpose, and that these qualities are both provided by the Association's standardization, nearly all users now desire their machines painted in the uniform standard Machine Tool Gray.

Color Standardization For Sanitary Ware

The Department of Commerce, Bureau of Standards, submits recommended commercial standards covering color to be used as a guide in the production of sanitary ware, such as plumbing fixtures, and allied products made of vitreous china, porcelain (all clay), enameled iron, metals, wood or glass, these recommendations having been adopted by the general conference of producers, distributors and users of colored sanitary ware, held January 23, 1931, at Washington, D. C.

The six colors recommended as standard colors for sanitary ware are to be designated as follows:

SC-11	Green
SC-20	Orchid
SC-30	Ivory
SC-40	Blue
SC-51	Light Brown
SC-60	Black

Standard color samples will be retained at the Bureau of Standards. ($1.50 per set; Secretary G. W. Wray).

Quoting from the Government Bulletin: "In the standardization of colors for sanitary ware it should be borne in mind that an absolute match of colors is neither possible nor necessary, but the colors should match as nearly as the differences in the character of materials, lighting conditions and manufacturing processes permit. Perhaps the most difficult problem to contend with in color matching arises in trying to match one type of colored surface with another of an entirely different texture.

"Certain coloring materials possess qualities that alter their appearance under different conditions of production.

"Daylight is usually considered white and is the proper type of illumination under which colors should be examined. Daylight, however, is variable throughout the day. Colors that match in natural light are often different when compared under artificial light. Colorists have more or less universally adopted north sky light as standard for matching colors."

The bulletin goes on to explain the method of making color comparisons, and it also tells the scope, purpose, and requirements of the project in a way which shows that the recommendations have been arrived at only after long careful study by experienced colorists cooperating with experts in the production of sanitary ware made of a variety of materials.

Classified Advertising

Advertisements under this heading 45 cents a line per insertion, minimum charge, $1.35. In estimating, calculate six words to one line, and add one additional line for heading. Use this department to obtain help, find positions, buy and sell equipment, dispose of manufacturing properties, etc.

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As foreman finisher or demonstrator of finishing materials for general industrial trade. Foreman finisher for 20 years. Address IF-367, care Industrial Finishing.

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POSITION WANTED

As varnish, paint and lacquer salesman with reliable established concern in the industrial field. Six years with same concern and still employed by them in southern territory. 40 years old and have had experience as foreman finisher and superintendent in furniture and auto plants, assuring practical knowledge with sales experience. Territory optional, dependent on line. Address IF-380, care Industrial Finishing.

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